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OBSERVATIONS ON THE ANTISEPTIC TREATMENT OF SOME OF THE ZYMOTIC DISEASES OF THE DOMESTICATED ANIMALS, WITH SPECIAL REFERENCE TO THAT OF SPLENIC APOPLEXY IN CATTLE.

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OWING to the immense strides which have recently been made in our knowledge of the life-history of some of the so-called germs or microbes, present in the blood and tissues of animals suffering from the various zymotic diseases, it is now universally admitted by scientific men that it is to the presence of these fungi that such diseases are due.

We do not propose to enter into the life-history of these organisms, concerning which so much has so recently been written, but to illustrate, by a summary of a large number of cases which have occurred in this practice, the treatment by which we can, in a large degree, combat the progress of some of these important diseases.

It has been asserted, and is often still maintained by many, that Splenic Apoplexy in cattle is an incurable affection. Yet few of us would be prepared to admit this statement, and the following record will suffice to prove clearly how valuable antiseptics are in its treatment. We will first devote our attention to the consideration of the treatment of this disease in cattle.

Of its prevention by inoculation, by M. Pasteur's method, we

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shall not treat, as the advantages and disadvantages of this process have recently been so ably set before us by many writers of ability and experience, both in this country and abroad.

It has been conclusively proven that the pathogenic *Bacilli Anthracis*, present in the blood and tissues of animals suffering from this disease, prove so rapidly fatal, owing to the enormous rate at which they multiply.

Three questions, therefore, arise for our consideration.

Firstly, Can an animal, by the administration of drugs, be rendered proof against the invasion of these microzymes?

Secondly, When present in the blood and tissues of the animal, while the disease is still in its incubatory stage, can these fungi be destroyed and their reproduction arrested?

Thirdly, When the disease is at its acme, are drugs of any avail in its treatment?

We will first review a number of cases, and then will revert to the answering of these questions.

In February last, I was summoned to a herd of cattle some miles from Louth. They were forty in all, and were diagnosed in adjoining crews. Two were dead on my arrival, and another one, which was exceedingly ill, and had a temperature of 106·4°, died on the following day.

Of the remaining beasts, twelve were affected, and had temperatures varying from 103° to 104°, one reaching to 105·2°. The symptoms manifested were those of Splenic Apoplexy, and the *post-mortem* examinations made on two of the beasts fully confirmed the diagnosis. The spleens were of the respective weights of eleven pounds and fifteen pounds.

A careful examination made of the blood-tissues and organs of one of the animals by my brother, Mr. Albert Gresswell, B.A. and M.R.C.S., revealed the existence of abundance of *Bacilli Anthracis*. The spleen, in particular, contained enormous quantities. I do not append any representations of these microbes, as their form and configuration are now so familiar to all of us.

On the following day, after my arrival, all the animals were put under medical and dietetic treatment. Sulphite of sodium and vegetable tonics were administered in appropriate doses. All did well for a time, and the medicine was discontinued after three

days, by the special request of the owner. On the fifth day, another of the beasts succumbed.

The medicine was then resumed, and continued for fourteen days longer. After this, all the animals progressed favourably.

I now beg to call attention to a most remarkable outbreak, which occurred some years ago in my late father's practice. Here not only the beasts, but the horses and one of the pigs on the farm were also affected.

On September the 7th, 1877, my father was summoned to a farm six miles from Louth. On his arrival one beast was found dead. The autopsy revealed all the characteristic pathological lesions of Splenic Fever. The spleen was much enlarged, and the endocardia of the ventricles of the heart were ecchymosed. The intestines were inflamed in patches in many places. The fæces were blood-stained. The blood was of a blackish hue. The lungs were engorged and black. The mucous membranes of the air-passages were much inflamed.

Abundant extravasations of blood were found in various parts, and were specially noticeable on the surface of the rumen, omasum, and abomasum. The lining membrane of the last was of a dark hue. There were in all twelve milch cows and twelve calves. In more than half some untoward symptoms were manifested. All were treated with sulphites. Mashes and linseed gruel were ordered to be administered. All did well for a time. They were treated for five days, and then were removed to a distance of several miles, and, contrary to special directions, were put out to grass. On the next day after removal one died, and two more succumbed shortly afterwards.

After this all progressed favourably. On the 11th of September my father was again called in to the same farmstead. He found a brown cart-horse dangerously ill, and death ensued three hours after his arrival. The pulse was 56, respirations 40, and the temperature 103·8°. Symptoms of Laryngitis, Bronchitis, and Pneumonia were manifested.

On September 12th, when called in again, two more cart-horses were found affected. One, a black cart-horse, aged six years, had a pulse of 60, respirations 46. There was in this case much external swelling around the throat; the other

horse also had similar symptoms. Both died in three or four hours after being seen. On September 13th another cart-horse died, and still another died on the 14th. On September the 15th three more cart-horses showed symptoms of disease, and the owner now, for the first time, consented to have the horses taken from work and put under regular treatment. The treatment consisted of the administration of sulphites and potassium chlorate. Nothing but soft food was allowed, and this consisted of cake, gruel, and mashes. The symptoms shown were similar to those described above.

The treatment was continued until the 25th. All three cart-horses recovered.

It is noteworthy that the beasts and horses had been feeding upon the same grass and drinking the same water. A *post-mortem* examination was made on the black horse which died on the 12th, and on one of the other horses. There was an enormous effusion of yellow fluid around the throat; this extended from the jaw to the breast, and must have amounted to several gallons. The lining membrane of the larynx and trachea was of a purple hue, and full of frothy, blood-stained secretion. The lungs showed signs of inflammation, but they were not so much affected as in the case of the beasts. The bowels were inflamed throughout. The spleen was enlarged, but there were no extravasations or ecchymoses. Shortly after the examination of the cart-horse, one of the pigs on the farm licked up some of the blood which had escaped. Two and a half hours afterwards it died. According to the foreman, it first turned red, then purple, and finally black, and then died.

A very remarkable outbreak of Splenic Fever also occurred in my father's practice in February, 1878. This is recorded fully in the *Veterinarian* of April, 1878. In this instance, out of a total of fifty beasts which were in the portion of the buildings where the disease appeared, only two survived.

The cause of this outbreak was attributed by Mr. Gresswell to the fact that the animals had been fed with decomposing grains. Sulphites were administered to some of the remaining animals, about fourteen in number, which afterwards manifested premonitory symptoms. One died, the remaining animals recovered.

A well-known Lincolnshire farmer occupied some grass land at Biscathorpe, which he was compelled to give up in consequence of this disease appearing nearly every year. In these outbreaks he generally lost four or five of his cattle before he had time to call in any advice. But the disease was quickly arrested as soon as the beasts were put under this treatment.

In the summer of 1877, Mr. W——, of Marsh Chapel, lost four beasts suddenly. The *post-mortem* examination revealed the existence of Splenic Fever. The others were taken up and treated. No further deaths occurred.

During the past four or five years, many outbreaks of Anthrax have occurred on a farm at Wainfleet. In these, horses only were affected, and the *post-mortem* of the blood and tissues revealed these microzymes in abundance. These were all treated as above.

After these descriptions of outbreaks, all of which have occurred within a radius of thirty miles from here, we may turn to answer the questions proposed above. It seems to us that sulphites administered to animals do act, to some extent, as a preventive against the invasion of these bacilli; and it appears that when administered in the early stages of the disease, they are equally advantageous in their action. Indeed, they may act by preventing the multiplication of the *bacilli* and causing their death. In advanced stages of the disease, it is probable that they are of little avail, as here the lesions produced are so grave as to cause death, even though the bacilli be destroyed. Yet these remedies may be of some advantage when administered with other appropriate medicines.

We have spoken of the sulphites specially, because abundant experience has shown us their use in this disease. Other antiseptics may prove, and probably have proved, equally valuable. In our experience we have noted that hypo-sulphites are not nearly so valuable as sulphites. Indeed, we consider them almost valueless.

We will now turn for a while to the consideration of the antiseptic treatment of Foot-and-mouth Disease.

During the past few months, I have had ample opportunity for noticing the marked and favourable results obtained by the judicious and careful use of antiseptics in its treatment.

In one particular case I had under my care—a milk cow in a very debilitated condition. She showed all the specific symptoms of the disease in its worst form. The breath was very fœtid, the fæces were fluid and blood-stained, the temperature 106·5°. This cow made a complete recovery under sodium sulphite, sodium salicylate, and tonics.

A few remarks might be made with regard to the saving properties of these drugs when administered to sucking calves affected with Foot-and-mouth Disease. We have found that in cases where these medicines have been administered, the calves did well. In cases where no treatment was adopted they progressed badly, and some succumbed.

Mr. Spencer, M.R.C.V.S., of Wragby, has also used these medicines in the treatment of sucking calves affected with this disease, and has had similar success.

I could cite many more instances, but the above will suffice to bring always before our notice the fact which few would dispute, viz., that in the sulphites we have a potent antidote against these low forms of vegetable life, which prove such scourges to man and beast.

We may add that almost all the antiseptics have been tried by us, and with varying success. In the treatment of Anthrax, at any rate, we have had most success with the sulphites.

In conclusion, we would draw attention to the fact that these remedies have proved of much service in Septicæmia and other toxic conditions of the blood, depending upon the presence of Bacteria in the blood and tissues of the animal. My late father used the sulphites in the treatment of animals affected with Cattle Plague or Rinderpest, in the last great outbreak in this country.

INSPECTION OF DAIRIES AND ZYMOTIC DISEASES. WITH WHOM DOES THE RESPONSIBILITY REST?

BY WM. ALSTON EDGAR, M.R.C.V.S., DARTFORD.

A CASE reported in the *Lancet* of to-day (8th Dec.), by the medical officer of health of Gateshead-on-Tyne, is invaluable

evidence of the necessity for an efficient and qualified staff of inspectors to carry out the elaborate intentions of the Contagious Diseases (Animals) Act.

If "strict attention in the matter of detail" is necessary for success in antiseptic surgery, it is in a twofold degree for the successful working of the above-mentioned Act, if it is to be a weapon of any value wherewith to suppress the extension of zymotic maladies.

Dr. Green, of Gateshead, found that fourteen persons suffering from Enteric Fever were being supplied with milk from a certain dairy in that town. He remarks: "On visiting the suspected dairy, I ascertained the following facts—There were two byres, one adjoining the house, and the other at the opposite side of an oblong yard. They were joined at one end by a midden, and a privy and ashpit, the other end was open.

"The byres were ventilated, but had too many cows in them for their size, the space for each cow being 500 cubic feet only. There were three untrapped gullies in this yard, and a doubtful one in the byre adjoining the house. The ashpit and the midden were unroofed, the former being drained. The milk was kept in a small scullery, the only ventilation of which was by a small window looking into the yard at a point twenty-six feet from the ashpit and ten feet from an untrapped drain."

This deplorable place had actually been *registered* under the "Dairies Order." Within the house a child was suffering from Enteric Fever (although it appeared that the family medical attendant and a consultant could not agree in their diagnosis; the former saying it was Enteric Fever, the latter only pulmonary congestion).

Dr. Green continues:—"The mother of the child, who nursed him, frequently milked the cows and washed the dairy utensils. The milk was kept in the previously-mentioned scullery in the house. . . . The sale of the milk was immediately stopped by an order from the Town Clerk, and the place has not been used as a dairy since, and will not be *re-registered* until such sanitary improvements as are *considered necessary* by the *borough surveyor* and *myself* are carried out." (The italics are mine.)

A further short quotation is necessary:—"6. The feebleness of

the Dairy and Cowsheds Order to deal with such a case. I had to assume powers far greater than the Order gives to stop the sale of milk."

I must now contend for the ample provision in the said "Order" to have PREVENTED the whole of the mischief mentioned, had it been *strictly* carried out; the "feebleness" is not in the "Order" itself, but with the *agents who administer it.* Who would expect the most perfect and expensive chronometer to act efficiently if one simple cog were missing?

It would be interesting to the profession, and possibly to the Privy Council, to know by whom these wretched sheds were inspected *before being registered,* and by whom they were *periodically inspected* in conformity with the Act. Evidently sanitary science was quite a secondary study with the individual. It may be hoped, considering the great absorptive power of milk, that the selection of the scullery as a milk-store is unique in the history of dairy farming.

In this district (and I doubt not in many others) the periodical inspection of dairies, etc., is carried out by a police-officer and an ex-policeman. It is well known to cow-keepers that such individuals are quite ignorant of symptoms of disease, and they find it by no means difficult, if so inclined, to evade the law. This applies especially to outbreaks of Foot-and-Mouth Disease amongst dairy stock. Here the *only* safeguard would be that the inspector should see the milk drawn from the cows and boiled or destroyed.

If the Dairies and Cowsheds Order is law, and efficient law, it should be carried out literally, and not left to the discretion of police-officers, or even borough surveyors.

GLANDERS APPARENTLY CURED.

BY S. GILLESPIE, M.R.C.V.S., ARMY VETERINARY DEPARTMENT, INDIA.

MR. MEYRICK'S question in the Journal of September induces me to give the following case, which occurred in the practice of the late Mr. Robert Prentice, of Longford.

The case, I believe, was that of a somewhat valuable animal, and was, in the opinion of the above-named gentleman, one about which there was not the slightest doubt; so he wisely recommended destruction.

But the owner, like many others, unfortunately listened to the voice of a charmer in the shape of a quack, who averred he could effect a cure, though there were lots of ulcers actively discharging the vile poison over several parts of the body, and perhaps on the legs too; for never having been close to the animal, I have to depend almost entirely on memory. I went to see the horse, but the owner having turned it loose in a meadow some weeks previously, it was so wild that it looked upon my friend and myself as enemies, and would not allow us to get near enough to inspect it properly; but I could see well enough the condition the body was in. But for the ulcers, the animal looked rather well, as the coat was sleek and condition good. This visit was made about May, and during the early summer all the sores dried up and the horse returned to its usual work, but died during the following autumn, either in October or November, suffering, I believe, as it had done before. I regret extremely being unable to give the case as detailed by Mr. Prentice, but I remember being perfectly convinced about its being one of pure Glanders. I give the name of the practitioner and also that of the owner (Mr. Fleming, of Clondaa, Longford), in hopes that some one may supplement my few remarks by a fuller statement of the case.

I was on a short visit when I saw this case, and taking considerable interest in it, took good care to hear how it progressed. I was informed when it became convalescent and *apparently* cured; but though cured according to my informant, I was doubtful, and considered it as only temporary. I am unable to say whether the horse was allowed among the others as usual, but know it was regularly worked until the disease showed itself again. I am also unable to state if the owner suffered any further loss for his folly in trusting to quackery with such a disease staring him in the face.

Now, the point about this case is, that it was a very bad one, that the horse was laid up for some months, and after-

wards completely recovered, as far as non-professional men could see; but that during the following autumn it succumbed to the disease. Had my knowledge of the case ended when the horse was reported well, then I should have had to detail a case in which Glanders had been apparently cured; but fortunately it went further, and the author of the quack-cure had a few months after to tell the story of death.

I regret exceedingly that I have only been able to give a very sketchy account of what will probably be a very interesting case to many; but on trying to commit to paper what was fresh in my memory nearly ten years ago, I find that my knowledge of it has to a considerable extent evaporated.

In conclusion, I cannot help regretting that the horse was not under the most careful professional scrutiny during the convalescent stage, for then notes would have been taken which would have been reliable, and, no doubt, would have been made known to the whole profession through the medium of some journal. Perhaps, however, such cases are not so rare after all, and this may be the means of inducing others to give instances where they were actually in charge of such, and which would be much more interesting than the above.

"ICHORÆMIA."

BY A. M'CARMICK, M.R.C.V.S., LEEDS.

AN aged stallion cob, the property of a fruiterer, was noticed on October 30th, by the owner, to be off his food, and also that there was an increased flow of saliva from the angles of the mouth. On the following day the symptoms were intensified, and on November 1st the owner requested me to see him.

On my arrival at the stable, I found the pulse was 72 and weak; respirations, normal; and temperature 104½°. The visible mucous membranes were coloured yellow. The mouth was filled with a ropy salivary secretion, and the tongue was much increased in size, and of a salmon colour. There was a diffused swelling extending from the submaxillary space to as high upwards as the roots of the ears. Both the upper and

under lips were also swollen. The animal would look at nothing in the shape of food, but sipped gruel or water slowly.

November 2nd.—Pulse 70; temperature 104½°; tongue much increased in size, and protruding from the mouth about four inches. Other general symptoms similar to yesterday.

November 3rd.—Pulse 66; temperature 103½°. At the tip of the tongue, and also on the mucous covering of the lips, there was desquamation of the epithelium, and to such an extent that in some parts it resembled small ulcers. There was also a very fœtid discharge on each side of the tongue a little posterior to the frænum.

November 4th.—Pulse 60, temperature 103°. The swelling in the submaxillary space opened, and discharging a fœtid, sanious material.

November 5th.—Tongue much reduced in size, and withdrawn into the mouth, also general desquamation of its epithelial covering; general appearance much improved.

November 6th.—Pulse 56; temperature 102°. Animal eating small quantities of soft food and drinking freely.

November 7th to 10th.—Animal convalescent, and is at the present date, December 11th, working and doing well.

Treatment.—Febrifuge medicine given in drinking water; solutions of potassium chlorate, and acidum carbolicum, were syringed into the mouth alternately. Hot fomentations were applied to the swelling externally, before it opened, after which it was treated as a common wound.

PARTURIENT APOPLEXY IN CATTLE, COMMONLY KNOWN AS "MILK FEVER."

BY J. H. COX, M.R.C.V.S., ARMY VETERINARY DEPARTMENT, 5TH DRAGOON GUARDS.

(*Continued from page* 413, *vol. xvii.*)

Similia similibus curantur, applied in its broadest sense, would embrace the answer to these sceptics, for we have by cultivation wrought within our animals an undue amount of fertility, which is profitable only so long as it works for our benefit. Once it

culminates in disease we are compelled to employ remedies which will render abortive the effects of our scientific interference. In this way milking, at the period referred to, will prove a useful ally.

THE ACT OF PARTURITION is what may be designated the chief *exciting cause.* It, therefore, behoves us to institute a certain regimen which shall prevent this natural effort on the part of the animal from becoming a source of danger. This I shall allude to when speaking of preventive remedies.

SYMPTOMS.

Some affections are characterized by a code of symptoms which experts only can diagnose, while others are so plainly visible that the uninitiated may be excused for their semblance of self-arrogated knowledge. There is no mistaking a well-developed case of Parturient Apoplexy. The cow-boy, radiant with the information, can tell us that "she has dropped after calving," which is significant of the fact that the affection has become unmistakably established.

Stock-owners very often do not pay sufficient attention to initiatory symptoms, but allow disease to create a stronghold before they begin to attack. In the first stage very simple remedies will sometimes suffice to re-establish the balance of health, whereas if disease is allowed to run on all the resources of science may fail to dislodge it.

The symptoms may be classified as *premonitory* and *established.* Premonitory, by their foreshadowing events which are looming in the distance, and which, if not checked, will assume definite proportions. Established, when we have failed, either through non-observance or want of capacity, to lop off the disease while still in a budding state, and before it has had time to blossom forth. The symptoms may further be divided into first, second, and third stages, and as such I shall present a description of them to your readers.

The First Stage.—Signs of approaching mischief generally make their appearance from the time the calf is born up to a subsequent period of twenty-four hours. As a rule, however, the disease shows itself within the first twelve. If particular atten-

tion is paid to the animal, it will be observed that the first sign to register the commencement of hostilities is a *rigor*, distinct, but not prolonged, the nervous system having by its magnetic influence, if I may use the expression, plainly "wired" to us the genesis of the disease; and, as is the case in other allied electrical disturbances, heat is generated, which is recognised by the readings of the thermometer. This exalted action of nerve ramification increases, and we discover twitchings of the ears, shaking of the head, and uneasy movements of the body generally, as "paddling." In aggravated cases we have moaning, which may culminate in bellowing. A peculiar expression of the eyes, symptomatic of approaching cerebral disturbance. The pulse is increased in frequency, owing probably to attempts of the heart to overcome the increasing obstruction so pathognomic of this disease. Following this condition, the lacteal secretion ceases. Other organs, as kidneys, bowels, etc., begin to lose their wonted functions. Rumination is consequently suspended, appetite gone.

Second Stage.—Having failed to check the onslaughts of the enemy, the symptoms become enhanced in severity. The patient, no longer able to stand, assumes a recumbent position, and makes attempts to get up, but with only partial success. The feeling experienced that the burden is becoming too heavy to bear increases the excitement, and at last one huge effort to rise is often made, resulting again in failure. Submission to the inevitable follows, and the undue excitement engendered by these violent efforts more or less subsides, and we approach

The Third Stage.—Complete paralysis is now established, and then begins that struggle for supremacy between life and death. The eyes become insensible both to light and touch. All organs of the body, except those essential to bare life, are in abeyance. The pulse indicates the difficulty the heart has in propelling the blood through the system. It is at this stage that the "slowing" of the circulation takes place, and on being able to overcome this depends our success. The respiration is slow and sometimes almost imperceptible, and accompanied by a low expiratory moan. The head is thrown violently about, resulting in its always being drawn to one side. Twitchings of the lips follow.

The udder still refuses to yield the supply of milk, and in some cases it becomes flabby, in others swollen and tense, whilst it may be contracted and drawn up closely to the abdomen. There is great tendency to become tympanitic, or "blown," arising from cessation of the peristaltic action of the stomach and bowels. This condition is often aggravated by animals being allowed to lie "broadside," a position they will assume unless constantly watched. As the case goes on the respiration becomes more impeded, and arterialization of the blood is imperfectly carried out. The air passages to the lungs do not seem to have sufficient capacity to admit the air, and we observe in consequence "oral breathing." The eyes become glazed. The lower jaw recedes from the upper. The power of swallowing is a thing of the past. It seems as if the merest accident would precipitate death. This is the critical time, and it is impossible for any one to prognosticate what the finality will be. If the forces in operation are powerful enough to overwhelm what little vitality there is left, death must inevitably ensue. But if, on the other hand, nature, assisted by medical aid, is sufficiently elastic to stand the pressure, we may hope to get *resolution.*

The signs of approaching recovery are centered at several points. The milk, although small in quantity, begins to make its appearance. The eyes lose their death-like characteristics. The pulse regains some of its tone. A sense of relief is experienced in the respiration. The power to deglutate has returned. The patient, by degrees, can support its own head; and in a marvellously short space of time all danger *seems* to have passed away. Success has attended our efforts so far, but we are not out of the wood. The blood is virtually the same. We have only crowded at a few points its dangerous elements, the greatest rush being made to those centres where purification is likely to take place, *i.e.*, the lungs and mammary gland. The excessive strain thrown upon the former is so great that some animals are compelled to yield to its influence, and another form of Apoplexy is developed, *i.e.*, Pulmonary, which terminates either in death from that condition alone, or its sequel, Pneumonia, or in resolution.

Another legacy of Parturient Apoplexy is continued Paralysis

or Paraplegia. The animal, having escaped Pulmonary Apoplexy, seems to be recovering, but is unable to regain the use of its legs. If this contingency arises merely from distended blood-vessels on or about the spinal cord, it will not be of long duration ; but if it is the result of blood extravasation or serous exudate, time only will overcome it, as the removal of the escaped fluid must be brought about by absorption.

If none of the sequelæ referred to have taken place, convalescence is speedily established, and in a few days our patient on the high road to recovery. Considering the gravity of the symptoms, it seems wonderful that restoration can be accomplished in so short time. The interim between the two points, that is, apparent death and robust health, occupies often but a very brief period. Be the *interregnum* what it may, the experiences awakened within the animal must have been of a forcible character.

Treatment.

No disease has been the subject of more empiricism than the one under consideration. We have, even at the present day, vaunted remedies said to possess specific properties as curative or palliative agents. These range from a combination of some of the many recipes found in the veterinary pharmacopœia to the more homely ones of the cowman or his wife, or those of the village parasite who preys upon the ignorant public. The owner of an animal so afflicted is, of course, anxious to bring about restoration of the patient, and often takes well-intended, but nevertheless misplaced, advice to effect this purpose. Scores of cases, I have no hesitation in stating, are rendered hopeless by such unskilful interference.

I cannot here wade through the numerous formulæ which are supposed to afford benefit ; suffice it to say that I have tried most of them with varying results, *ergo* shall confine myself to a description of those which may at least be said to be rational, and which in my hands have proved fairly successful.

In the first place, I shall commence with venesection, or blood-letting. This detail finds many advocates, whilst others condemn it. The fault, if any, does not lie so much in the operation as in the time chosen for its execution. If blood-letting is in

any way useful, it is in the primary stage of the disease, and before that species of *inertia* which overtakes the animal has become established. To bleed when the heart has lost tone is a suicidal policy, and cannot be too highly condemned. The right time is when the first symptoms make their appearance, and before "dropping" takes place. At this juncture the heart is struggling to maintain its supremacy, but has to succumb to influences which implicate not only this, but other organs. The extraction of five or six quarts of blood at this period very often has a beneficial effect, but how seldom is the professional man called in when his services would be of avail in this respect!

Purgatives of all kinds find their votaries. Some pin their faith on large doses of *magnesium sulphate*, some on the forms of *croton*, either in the shape of oil or farina, whilst others resort to *oleaginous compounds, etc.* To give purgatives in a well-established case of Parturient Apoplexy—that is, during the comatose stage—betokens a species of ignorance not creditable even to the merest tyro. The cause giving rise to torpidity of the bowels seems to be lost sight of. Let the true pathology be what it may, every one must admit that the intestinal tract ceases to have any influence over its contents, and that purgatives, however drastic in their nature, do not produce the effect their administration would seem to justify. We cannot hope to restore the system to its original state of susceptibility by pouring into the stomach large quantities of either Epsom salts or any other purgatives. The cessation of peristaltic action is co-existent with the loss of nerve power, and as long as this continues it is hopeless to expect these agents to produce any appreciable results. We must first restore the pristine condition of the nervous system, when that of the stomach and bowels, together with other organs, follows as a natural sequence. There is a stage, however, when cathartics are admissible—*i.e.*, at the commencement of the attack, and before the brain and its accessories shall have ceased to perform their respective functions. One great and very weighty objection may be found to their use, and indeed to most of the remedies employed to combat this disease, viz., that the flesh, supposing the cow be in a fit condition to slaughter, may be rendered useless as a food

commodity for human consumption. Therefore, considering the questionable benefit which accrues from their administration, I should hesitate before adopting this mode of procedure.

Local remedies should enter the category of remedial agents. These hitherto have been confined to the application of liniments, ice, cold irrigations, the hot iron, electricity, sheepskins, etc., to the head and vertebral column, whilst those parts from which the disease takes its origin have been left untouched. If the act of parturition is the exciting cause of this affection, surely the structures principally concerned in this process have something to do with its development. To combat it successfully we must direct our attention to the uterus. The first step is to establish a proper reaction in its walls; and although this applies with greater force as a preventive measure, we cannot afford to lose sight of it as a remedial agent. Before proceeding to adopt other local remedies, to which I shall allude hereafter, the uterus should be washed with the following, and repeated every six hours: Alum calcined, ʒi; Carbolic Acid, ʒi; Glycerine, ʒiv; Aqua, oj. An ordinary enema syringe, or the primitive bladder and pipe, will effect this purpose. The above solution serves a two-fold object: on the one hand, by its astringent properties acting upon the muscular tissue and walls of the vessels, it enables the uterus to forcibly contract upon itself, and thus bar the road to any deleterious material, except by endosmose, entering the circulation; on the other, it cleanses the parts with which it comes in contact, and prevents, by its antiseptic properties, any decomposition which, especially when the weather is favourable to it, is likely to take place.

Ergot of rye should be administered either in the ordinary manner or subcutaneously. The latter is to be preferred, as the power of swallowing soon becomes a matter of difficulty. Twenty-five grains of the ergotine should be injected every six hours. The specific action of this drug is primarily on the ganglionic system of nerves, and secondarily on unstriped muscular fibre, which it contracts. The same action is extended to all vessels, predominating perhaps in those of the uterus and spinal cord. The uterus possessing a large amount of unstriped muscular fibre, and being highly endowed with blood-vessels, it

can be understood that the effects the ergot of rye determines are at once productive of good results. *To ensure the full benefit of this remedy it must be fresh and good.* Mr. Briggs, F.R.C.V.S., in the VETERINARY JOURNAL of 1879, gives his experience of ergot of rye as follows: "Having, like most practitioners, experienced frequent disappointment as to the adverse issue of this disease under the many known methods of treatment, I was, about a year ago, led to adopt the exhibition of ergot, by a consideration of the records of its physiological and therapeutical actions. For some time I administered *pulvis ergotæ* or *liquor ergotæ* 'per vias naturales,' but in the established disease the results were not encouraging. Where, however, the *pulvis ergotæ* had been added to the ordinary 'drink' given immediately after calving, no case of Parturient Apoplexy has come under my notice; but whether this can be ascribed to mere coincidence or to ergot as a prophylactic, I do not pretend to say. The failures, although discouraging, I suspected might be due to the uncertainty of the action of these preparations of ergot—as they are often found bad and inert. I then resorted to the hypodermic injections of the active principle of the drug, giving from twenty-five to thirty grains of ergotine, taking care to deeply inject into the muscular structure to prevent after mischief, and repeating the dose if necessary in ten or twelve hours. The other treatment consisted of counter-irritants, catheterism, enemata, etc., etc., with, where deglutition was not much impaired, the exhibition of a saline purgative. This treatment has, so far, in the limited number of cases in which it has been tried, been attended with almost universal success, whether in the early or later stages of the disease. Although we may form some idea of the rationale of the treatment by ergot, it would, I think, be premature at present to attempt any definite conclusions." Mr. B., without committing himself as to the pathology of this disease, has at all events struck one of the key-notes to successful treatment. And the facts he adduces are, in my opinion, consonant with the ideas of it being due to Thrombosis; for the ergotin, having been taken up by the circulation, begins operating at once by enhancing the tonicity of the walls of the uterus, and thus tending

to that perfect involution which I claim is the only safeguard. This gentleman's testimony as to the prophylactic influences of this drug is most valuable, and adds another link to the chain of evidences as to the real nature of this malady.

Stimulants undoubtedly are useful agents to employ. By their action they tend to quicken the circulation, which, considering the semi-stagnancy that has taken place, is a *desideratum*. Some practitioners object to their use, on account of the reaction which they claim follows the administration of large doses of alcohol; but they seem to forget that the coma existent in Parturient Apoplexy is totally different from that which accrues from acute alcoholism. How is it possible to remove congestion of the entire vascular system, and hence nerve tension, unless by direct and powerful stimulation? I do not remember having witnessed coma engendered by such procedure.

Stimulants, although very essential, often fail to bring about restoration unless accompanied by other means. *This leads me to the one remedy above all others which I consider to be the sheet-anchor in all such cases*, viz., "*the cold, wet pack*." For the benefit of my readers who do not understand this method, I will describe it in detail. It is simple, but effectual. Success depends upon its being properly carried out, which can only be accomplished by personal supervision. Nothing must be left to attendants, otherwise failure may result: this I know from experience. In dealing with a case the assumption is that at least the second stage of the disease has been reached, *i.e.*, the animal is in a recumbent position and unable to rise. After ascertaining whether the bladder requires assistance to evacuate its contents, stripping the udder of what milk it contains, and otherwise making the animal comfortable, rub in about a quarter of a pound of chilli paste along the course of the spine. If the paste is not obtainable, strong ammoniacal liniment or mustard embrocation will serve the purpose: this must be accompanied by a considerable amount of friction. Having done this, obtain a large thick linen or cotton sheet, such as is used for domestic purposes, immerse it in cold water, wring out the superfluous fluid, and cover with the sheet every part of the animal except the head and, of course, those in apposition with

the floor. Over this place two or three rugs, or more if necessary, the whole to be enveloped with mackintosh sheeting, observing the precaution that not a single portion of the body is left exposed. The sequel will be that in a short time the animal will be teeming with perspiration. So long as this action of the skin goes on, it may be assumed that the "pack" is doing its work. But once it is observed that this effect is not produced, another sheet, already immersed, should replace the one on the animal. My experience is—and I have tried this method many times—that it is necessary to keep it on from half an hour to an hour, or even longer, before a change is imperative. In replacing the sheet the greatest despatch should be practised, lest a check to the action of the skin takes place. If sufficient upper clothing, such as rugs, etc., has not been applied, more should be had recourse to. It is not always convenient in out-of-the way places to find the desired amount, so ordinary blankets, sacks, etc., may be extemporized, the whole to be enveloped in dry, clean straw. Due attention should be paid to the "pack." The restless state of the animal necessitates the greatest amount of vigilance on the part of those in charge. Once it begins to operate, and the action is kept up, leave well alone; close every aperture where evaporation is likely to take place. By this means the skin is brought into violent action, a very large amount of blood is determined to the part, the consequence being that all the vital organs are relieved. The brain begins to resume its functions, the light of life pervades the countenance, and from a state of coma we pass to one of consciousness. There is, as far as I can see, no particular merit in the pack, except that it is the means to an end. Could other means be devised as effectual in producing this exalted action of the skin, similar results would doubtless accrue.

Now arises the question, What changed pathological conditions have been induced to produce such happy results? It will be remembered why coma is engendered, why the inability of any of the organs to perform their legitimate functions; simply that they are supplied with blood which is foreign to their nature, a fluid possessing in itself elements which exercise undue pressure by their wonted affinity for the walls of the vessels and sinuses

through which they pass. This "slowing" of the circulation becomes enhanced. The *vis a tergo*, a meaningless term, and death results. In the production of this excessive perspiration we quicken the activity of the vessels of the skin. For the time they assume a hyperæmic condition similar to that observed in the use of the Turkish bath. With the blood thus determined, we have these foreign elements to which I have alluded. Molecule after molecule follows on in quick succession until the vital organs are relieved, and the skin, which is not vital, becomes their repository. The balance of nerve power having become re-established, the usual disintegrative influences are set to work, and the blood by degrees loses that overplus of fibrin which nature had been so generous in her bestowal.

To show the necessity for great attention to the "pack," I will give an illustration which occurred in my practice in the year 1870. Patient, on my arrival at 4 p.m., was comatose. The method described was adopted. I stayed until 10 p.m. to see the result. The animal, although improving, was still comatose. At 1 a.m. it had so far recovered as to be enabled to support its head without artificial assistance. At 4 a.m. I again visited the animal, and, to my disgust, found it "broadside" and without a particle of covering, having in its struggles dislodged the pack and its accompaniments. The skin was icy cold, and in three hours the patient succumbed. The attendants on my arrival were fast asleep, and, by their neglect, had allowed the animal to get into this condition. Here was an instance where recovery was within a measurable distance, and was only frustrated by the culpable negligence on the part of those left in charge. The disease was, of course, increased tenfold, for during my visit at 1 a.m. the pack was in full operation, and later on, or at 4 a.m., it did not require a professional man to discover that the whole of the blood, or nearly so, circulating the skin had been driven back into the system, producing results I have already chronicled. *Under these circumstances, I must impress upon my readers who think fit to try this method, that constant supervision is necessary, otherwise the remedy will not only prove useless, but will give an impetus to the disease.*

(*To be continued.*)

Editorial.

RETROSPECT AND PROSPECT.

THE commencement of the year 1884 gives a good opportunity, which should be made available, for casting a backward glance over the ascent on which the profession has been slowly toiling its way for some years in these kingdoms, and an upward and forward look towards the ground yet to be traversed and the obstacles to be overcome. For many years after the incorporation of the veterinary profession, progress was as impossible as it was previous to that event, owing to the little interest taken in its welfare by the members themselves, the absence of united action and of individuals to assume leadership, and the pernicious influence of two rival schools, jealous of and competing unfavourably with each other, and extremely hostile to the Royal College of Veterinary Surgeons, whose interference in educational matters they would not brook. It is only within a few years that the march towards improvement began, and this movement has been coincident with the assumption of its duties by the profession, as represented by the Royal College, and the relegation of the schools to their sole and proper function—the training of candidates for membership. Throwing off the fetters which condemned to almost fatal immobility for so many long years, strength has been rapidly developed, formidable obstacles have been surmounted, unanimity has been secured, and results have been obtained which at one time seemed almost impossible of realisation. Only three years ago the members of the profession were not recognised by law, and there was nothing to prevent any impostor from assuming their title and competing with them on equal terms, so far as the public knew or cared to know. This is now changed. The State has taken the profession under its protection, and affords it the recognition given to other valuable professions. No one dare assume any title or designation bestowed by the Royal College on its graduates, and by which they are known to the public; and on the first day of the present month, no person who is not on the Register of Veterinary Surgeons can take or use the title of Veterinary Surgeon or Veterinary Practitioner, or any name, title, addition, or description, stating that he is a Veterinary Surgeon or a Practitioner of Veterinary Surgery, or of any branch thereof, or is specially qualified to practise the same.

The Veterinary Surgeons' Act virtually emancipates the profession from degradation and every kind of discouragement, and places it in a position second to none other in the country, giving it liberty to work its way upwards, without having to contend with the pernicious influences which have hitherto surrounded it, and with such fatal effect. The benefits to be derived from the Act will become more apparent as the years roll by, and render the prospects of the profession brighter than could ever have been anticipated.

Thanks to the strenuous efforts of the Royal College of Veterinary Surgeons, the educational standard of the profession has been rising. But so long as the general educational tests were allowed to be applied

by the different schools in their own fashion and at their own discretion, it was obvious that further improvement in this direction was hopeless, while scientific training must necessarily be imperfect or little better than a farce.

Now that the Royal College has done what it ought to have carried out long ago, and summoned courage to insist that every candidate for its diploma must give evidence of possessing at least a fair general education, in addition to technical knowledge, rapid strides should be made in the professional and social position of its members. The painfully low standard of general and professional education hitherto existing, has done more than anything else to bring veterinary medicine into disrepute and its practitioners into disrespect.

The action and efforts of the Royal College have been much hampered by those whose interests were opposed to improvement, and its right to initiate improvements has been questioned whenever an attempt has been made. The supplemental Charter recently obtained, together with those previously existing, as well as the Act of Parliament, give it all the powers necessary to improve the profession to any extent it may choose to do, and increase the examination fees, if need be, in order to secure this improvement.

So far, then, the retrospect is favourable and the prospect bright. The profession has had to fight a heavy battle with small means, but it has been amply victorious. The last three years have been the most momentous in its entire history. It has obtained State recognition and protection; it has shaken itself free from the thraldom of the schools, and ensured the public properly-educated practitioners; its members in the Army have done their duty so meritoriously at home and in the field as to earn for themselves not only the special recognition of the general officers under whom they have served, but also to have removed the hitherto insuperable barriers opposed to their receiving Royal recognition in the way of special honours, and the privilege of presentation at Court; while the way to academical honours has been cleared by the magnanimity of the Glasgow University.

It would almost appear that there is now nothing more to complain of or to strive for, so far as the external world is concerned. But it is not so. Much, very much yet remains to be done by those who are willing to do it. The public yet require enlightening as to the great value of our branch of medical science, and the necessity for encouraging competency and zeal. Veterinary surgeons can do much to protect the public health in various ways in which their services have not yet been sought. In the suppression of epizootic diseases it may be said they have had but little to do, owing to the ignorance or short-sightedness of various authorities; hence agriculture is nearly ruined, and the public health and wealth injured by diseases which veterinary sanitary science shows can be extinguished by proper police measures and suitable means.

In the matter of professional education there is a heavy arrears to be discharged; and the suitable combination of science and practice has yet to be obtained. Without a thoroughly scientific training we can make no pretension to be men of science, nor can we act as such; and

unless we can apply our scientific knowledge to a useful purpose we cannot benefit the public. As yet, we in this country have done very little to show that we are animated with the true scientific spirit, and in this respect we are immeasurably behind our Continental colleagues. A literary spirit has lately evinced itself, and this we should carefully foster. It is in the power of every one to benefit his profession by literary work, and especially by the publication of facts and observations, either in an isolated or a classified form. It is at once a source of personal gratification, and even of training, as well as of service to one's brethren—present and to come, and an index to the position of a profession, to contribute as far as one can to the storehouse of facts and knowledge.

"A science of medicine," says a distinguished medical writer, "must depend upon the classification of facts, upon the comparison of cases alike in many respects, but differing somewhat either in their phenomena or their environment. The great obstacle to the development of a science of medicine is the difficulty in ascertaining what cases are sufficiently similar to be comparable, which difficulty is in its turn largely due to insufficient and erroneous records of the phenomena observed. . . . . Very, very few are the men who can, by and for themselves, see and describe the things that are before them."

Our future is now entirely in our own hands. We have acquired the freedom and legislative protection which were so necessary to our progress and welfare; we have obtained distinctions and favours which were hitherto denied us; every year our responsibilities will become greater, as more will be expected from us, in return for the protection, immunities, privileges, and favours we enjoy. Efforts must be made, and continuously, in the direction of improvement, politically and scientifically; and hesitation, fear, and doubt, which had operated so perniciously on the Council of the Royal College for so many years, must be thrown to the winds when professional interests are at stake.

> "Our doubts are traitors,
> And make us lose the good we oft might win,
> By fearing to attempt."

Courage and determination are alone needed to ensure political success; highly-trained intelligence, patience, perseverance, and enthusiasm are required to achieve scientific success. These qualities, we earnestly hope, will be conspicuous in the profession in the years to come.

THE CHARACTERS AND NATURE OF THE PROCESS RESULTING FROM INOCULATION WITH THE VIRUS OF CONTAGIOUS PLEURO-PNEUMONIA.

THE nature of the alterations which are observed in any part of the body of an ox or cow into which the virus of Contagious Pleuro-pneumonia has been inoculated, has always been considered special to the malady by those who have attentively studied this plague of bovines. These alterations have been recognised as similar to, if not identical with, those which take place in

the lungs ; hence the feeble witlings who could not understand the pathology of the disease, have been pleased to amuse themselves with deriding the views of those who saw the same process in the lungs naturally infected and the tail artificially inoculated, by referring to "Pleuro-pneumonia in the tail." The silly jest proved nothing. Of more moment to the scientist are the investigations made by those who are anxious to elucidate the nature of the disease ; and the latest of these are by M. Colin, Professor at the Alfort Veterinary School. From the report in which he has embodied the results of these investigations we learn :—

1. The inoculation of the virus of Contagious Pleuro-pneumonia of bovines, results in developing in the cellular elements subjacent to the skin or in the muscular interstices, a process which is, from a histological and pathological point of view, the equivalent of that in the lungs and pleura in Contagious Pleuro-pneumonia. The essential characteristic of this process is the yellow fibrino-albuminous exudates, charged with leucocytes, nucleated epithelium, and various granules, these exudates resembling those produced in the connective-tissue interlobular septa of the lungs.

2. The exudate furnished by the irritated connective tissue, as a consequence of the inoculation, possesses in its fluid part, as well as in its solid elements, a degree of virulency equal to that of the products of the same nature obtained from the pulmonary tissue of animals affected with Pleuro-pneumonia.

3. The virulent elements of the exudate, in order to produce their full local reaction, should be introduced into the connective tissue, which is more particularly their cultivation-ground. They do not appear to have any effect when they are merely deposited in the superficial layers of the skin, unless the cellular prolongations of the derm do not protect the subjacent connective tissue.

4. The considerable swelling of the tail, the neck, dewlap, and all the other parts rich in connective tissue where the insertion of the virulent matter may be made, as well as the gangrenous and other accidents which are sometimes noted, are not due to septicity of the matter, but to its penetration to the points where it is cultivated and regenerated too readily.

5. Nevertheless, in practice it is better not to employ altered virus, as the alteration, according to circumstances, complicates and aggravates the effects of the inoculation, often even annihilating them by destroying the virus.

6. Inoculation by the ordinary procedure does not appear to confer immunity unless it is followed by reaction, manifested by more or less extensive tumefaction, œdema, and exudation.

7. The degree of immunity resulting from inoculation appears to be proportional to the intensity of the reaction consecutive to the operation. Immunity is acquired with difficulty by superficial dermic insertions not followed by swelling ; and, after these insertions, intra-cellular inoculations are followed by serious, often fatal, accidents.

SWINE PLAGUE.

THE study of Swine Plague, commenced recently by Pasteur, and its microbe or bacillus, discovered by his lamented colleague, Dr. Thuillier, who a short time ago died of Cholera in Egypt, has been making rapid progress in France, where the scourge is known as "Rouget." M. Pasteur has recently found that by passing the bacillus of "Rouget" of pigs through rabbits, he can effect a considerable attenuation of the disease

virus. He has shown that rabbits inoculated with the bacillus of Rouget become very ill and die, but if the inoculations be carried through a series of rabbits, a notable modification results in the bacillus. As regards the rabbits themselves, no favourable change occurs—they are all made very ill or die. But if inoculation be made on pigs from those rabbits at the end of the series, it is found that the pigs have the disease in a mild form, and, moreover, that they enjoy immunity from further attacks of "Rouget." This simply means that the rabbits have effected, or the bacillus has undergone whilst in them, an attenuation of virulence. So the pigs may be "vaccinated" with the modified virus, have the disease in a mild form, and hereafter be protected from the disease. Mention may be made of some collateral experiments of Pasteur, also performed recently. Briefly, it has been discovered that the bacillus of the "Rouget" of pigs undergoes an increase of virulence by being cultivated through a series of pigeons. Inoculations from the last of the series of pigeons give rise to a most intense form of the disease.

By successive cultivations at different temperatures, the bacillus is also deprived of much of its virulent property, and its inoculation exercises a protective influence on the pigs so inoculated. In the name of Veterinary Surgeon Maucuer, a note on this subject was recently read by M. Bouley, to the Paris Academy of Medicine. He had inoculated a number of pigs with the cultivated virus, and during an exceptionally severe and deadly outbreak of the disease, which carried off all the porcine tribe in the district except those so inoculated, ample proof was afforded of the efficacy of this protection. "All the 'vaccinated' pigs, without exception, resisted all the possible causes of contagion. They cohabited with the diseased; they lay on litter impregnated with the dejections of those which were moribund; they ate out of the same troughs with the victims of Rouget; they have even been shut up for twenty-four hours with those which had succumbed; and they now continue to live in non-disinfected pigstyes. The success is admirable."

EVERY-DAY MATTERS IN AN INDIAN MILITARY VETERINARY PRACTICE.

BY J. H. STEEL, M.R.C.V.S., A.V.D., IN VETERINARY CHARGE, R.A., H.S.F., SECUNDERABAD.

WRITING from Secunderabad, in the Deccan, my object is to convey to English practitioners some idea of what we have to think about from a professional point of view here, to give young Army veterinary surgeons a little notion of what they may expect to have to do when they come out to India; and, finally, to make a few observations which may contribute to our knowledge of geology and geography in relation to disease. On landing in Bombay, one is immediately thrown among Arabs, and is apt to be deceived by the great normal development of the hocks of these beautiful animals, to mistake thickenings of the skin of the pasterns (the result of friction and pressure from heel-rope) for Ring-bones, and to *over age* any submitted to him for examination; for, as Arabs have hard food from the time they are weaned, their marks are soon lost; indeed, it may be taken as a rule, that *mouths wear more quickly in India than at home*, the bulk of fodder consumed is greater and more gritty, also the grain is generally imperfectly cleaned, and so contains stones. The Arab, as concerns development, is more forward than the Australian, and the latter less so than the English horse. Horses of the Persian Gulf, "Gulf Arabs," as they are

termed, to distinguish them from Arabians generally, carry a cicatrix indicating the seat of the wound made in the removal of a portion of one of the cartilaginous alæ of the nostril, with a view to "improving on nature" (a desire as common in the East as in the West), and bringing up the animal nearer to the Arab standard of what a horse should be, "his nostrils like the mouth of a roaring lion." Throughout the country, but especially at Poona, one notices a peculiar attempt at something of the same nature, to open up the naturally small nostrils of the donkey. Almost every one in the numerous droves of diminutive pack-asses driven through Poona has the interior of the false nostril exposed by a double incision, in such a way that the flap of semi-excised tissue hangs in a most peculiar manner, and, one on each side, wags to and fro as the little animal ambles along. On landing, we at once notice the topis, or pith helmets, worn by the tramway horses to protect the brain from the direct rays of the sun. Whether or no such a precaution is necessary will constantly be debated. Doubtless the tramway authorities have learnt this necessity by experience: the work of their horses seems to be severe, and to involve much exposure. In very many stations artillery stand in the open: native cavalry horses do so almost everywhere. Generally the animals have protection from the vertical rays of the sun by lines of trees with good expanse of branches, and fortunately in the hot weather foliage is very plentiful, so as to afford a good deal of shelter. Others, however, have to stand without such protection. Imagine the state of these poor animals in the hot weather, standing on a red soil, so hot as to render their iron shoes scarcely touchable, and which reflects a glare which we do not exaggerate in calling "terrible," with huge granitic masses close by, shutting out any breath of air, and increasing the general glare and glow; air rising from the ground on every side, so that from a short distance streams of it are visible flowing upwards, in the manner familiar to us at home in connection with gas in church. When Europeans are tossing on their beds in carefully-darkened rooms, under punkahs, cursing the day of their arrival in India, these poor horses stand exposed, although many of them are natives of a much less ardent clime. It is wonderful, however, how little they suffer in consequence, apparently. There are a few cases of apoplexy, and generally a very marked falling off in condition, but few immediate deaths. However, it is a very serious and important question whether there are not *after effects* which are apt to escape observation. Animals which are roaming at large, during the heat of the day seek some shady spot and sleep; they can shift their position in accordance with emergency; huge buffaloes wallow in the semi-dry mud of tanks and hollows; almost every living thing finds shelter of some kind. Native orderlies, and such like, go about with thick coverings over their heads; other natives, like the rest of nature, repose *in siesta!* But the troop-horse cannot escape from his lines to seek welcome shade: the jhool (blanket), thickly eight-folded along his back, protects his spine to an extent, but is soon shifted as he moves about uneasily, trying to drive away tormenting insects. He is not obliged, like animals turned out to find their living as best they can, to roam over a great extent of country, in the endeavour to obtain a precarious subsistence from ground which encloses the valuable hariali grass *under* its hard, baked surface, and affords only thorny and prickly shrubs such as have been enabled by their natural defences to withstand the raids of goats and cattle driven mad with hunger, and reduced to skeletons. The troop-horse is well fed, too often receives as much and as heating food during the hot weather as during the cold, through mistaken economy; he gets practically no work (during the hot weather), and often his hour's morning exercise is sadly curtailed through turning out late or coming in soon, to avoid the sun; too often evening exercise is forgotten or neglected. What wonder, then, that LIVER DISEASE is so frequent in

India? The prolonged heat, exhausting the powers of nature, predisposes to disease when the monsoon suddenly "breaks," and, of course, our horses, which have been specially treated as though destined to the production of *pâte-de-foie-gras*, crowd the infirmary suffering from Liver Congestion, its varieties and sequelæ. Although at home we may have seen but little Liver Disorder (perhaps more frequent than is generally supposed), we very soon learn that in horses, as in men, *the liver is the organ most liable to disease out here.* Pulmonary disease is proverbiably infrequent. There is one form of Lung Disease which I have observed in India, and not at home, *Œdema of the Lungs.* It is one of the complications of Liver Disorder. At first we are apt to mistake acute disorder of the Liver for Pleurisy: the symptoms are similar to some extent. *Post-mortem* examination generally shows that the diaphragmatic peritoneum has been inflamed. Catarrh, Broken Wind, and Coughs occur here but seldom. I have not in eighteen months seen a case of primary disorder of the urinary apparatus. With the exception of lameness, and injuries of various kinds, four-fifths of the cases in this station are due to liver derangements, and of the remaining fifth one-half are disorders of the skin. Let us, in a conversational sort of way, look into this statement, and deal with the various headings under which the cases occur on our books in conformity with the exacting, but necessary, requirements of official routine.

COLIC in India is generally due to sand in the bowels, grain bad in quality, quantity, or mode of preparation, bad grass, or Liver Disorder. Now, among the horses under my professional charge I almost invariably get the latter form. The following are my proofs: *A priori*, the horses are, in spite of representation to the authorities and the wishes of the battery officers, given too stimulating food throughout the hot weather, when, by regulation, they have to be in by a certain hour in the morning, and the evening is not suitable for any but very gentle exercise. The excuse is that because bran cannot be obtained in sufficient quantity for all Government horses in the station, *none* shall have any. A very false principle to work upon, to my mind. Secondly, the grain and grass are prepared on most approved methods, and cases of Flatulent Colic are not frequent. Thirdly, Jaundice is more or less marked in almost every case. Fourthly, Colic is frequently the earliest noticed symptom of indubitable Jaundice, and those cases which are liable to Colic almost invariably are subject to Liver Congestion and its sequelæ. Finally, I have observed that after death, or destruction from other causes, autopsy shows that the liver has been or is diseased. Most cases which succumb to Liver Disorder (about 2 per cent. of the total number of cases of Liver Disorders) have the organ in a complete state of atrophy —very small and light—quite incapable of doing its work. I have seen it enlarged in one case, and in another portions were sloughing away.

FEVER.—The frequent entries by my predecessors in this charge, of cases as "Simple Fever," recall to my mind the statement of PERCIVALL, one of the most exact clinical observers, that Simple Fever seldom or never occurs in the horse. I have seen nothing since my arrival in India to lead me to differ from this view. I, of course, do not dogmatically state that I, and I only, am correct, but I fancy most cases of "Simple Fever," so called, are incompletely diagnosed cases of Choliasis, or Bile Poisoning of the Blood. This is a question of the greatest import in veterinary practice. The cases to which I refer are generally characterized, sooner or later, by yellowness of the membranes, petechiæ of conjunctiva and pituitary, and the so-called "bloody urine," also petechiæ on the skin entered as cases of Urticaria, Erythemata. Fever often runs high, but the pulse is remarkably small. Such cases are frequent at the commencement of the rains, and occur in patients which have the reputation of being "livery subjects." I have no

evidence that herbivora suffer from Intermittent or Remittent Fever: they certainly are not very liable to Spleen Disorder. *The dog, on the contrary, seldom suffers from true Liver Disease in this station: his spleen is generally affected.* Dogs of fancy breeds here generally succumb to progressive Anæmia, associated with Remittent Fever, and atrophy of the spleen.

ANTHRAX.—I cannot help thinking that during an outbreak of Anthrax many cases of Choliasis are mistaken for the more serious disease. Detection of true bacilli in the blood is *the* diagnostic symptom of Anthrax. Without this, however shrewd may be our suspicions, we cannot rely upon our opinion. When first I came to this station I was (and have been since) on the *qui vive* for Anthrax. My first doubtful case was one of sudden death in a patient suffering from Liver Disorder. I found the spleen enormous, the tissues yellow, the liver very small, and neither frothy evacuations from the respiratory passages nor local swellings about the throat, etc., preceding death. Had this case occurred in England, I should not have had the least doubt as to it being a well-marked one of Choliasis. Being in India, I carefully examined the blood, and found no bacilli. Every now and then a death has occurred of the same nature, and in all cases traceable to antecedent disease; but the indications of Blood-poisoning are always well marked, and the liver diseased primarily. *I cannot help asking myself whether some of the so-called sporadic cases of Anthrax are not of this nature.* Of course, I may be all this time labouring under a gigantic professional error: it may be owing to my happy star that disease has not, during the last eighteen months, decimated the horses under my charge, and all the cases which I enter as Choliasis, or Cholæmia, or Choluria, may be Anthrax. But I am firmly of opinion that there is no error here. And the aggregate number of medical cases and of deaths during the time I have been in charge has not proved above the average.

LYMPHANGITIS AND ŒDEMA are serious accessories of Liver Disorder, the former a sequel, the latter a complication, or rather symptom of Choliasis. *I am convinced that Inflammatory Œdema can almost always be traced to primary Liver Disorder.* It is so frequently the case that an animal which has had several attacks of Liver Congestion, and whose permanently emaciated condition shows hepatic inadequacy, becomes thoroughly incapacitated by Œdema. I have had two such cases within the last week.

SKIN ERUPTIONS of sorts, so frequent in India, are often due to hepatic derangement. The pathology of that form variously described as Psoriasis, Prurigo, Erythema, and Prickly Heat is uncertain; but it is at any rate "on the boards" that it may be caused or associated with the presence of sand in the bowels; or it may result from over-work, thrown on the skin in compensation for imperfect action of the liver. On *post-mortem* examination in bad cases of this skin disease, we generally find the liver small, and having white calcareous nodules disseminated through it (probably the result of lobular atrophy. They have been considered kŭnkŭr, but seem rather simple calcareous degenerations. True, kŭnkŭr is, however, sometimes found in the liver). Boils indubitably are associated with liver derangement. And generally we shall find that cases of Urticaria, those sudden and evanescent eruptions of spots over the greater part of the skin, are only petechial manifestations of Choliasis. In proof of the high state of functional activity and predisposition to disease of the skin in the Tropics, I may state the following facts:—

(1) Blisters require to be weaker than at home.

(2) A crude castor oil supplied for burning purposes, if used by mistake for bland oils as a wound dressing, excoriates the skin over which it trickles.

(3) The same result follows use of carbolic oil stronger than 1-8.

PURPURA HÆMORRHAGICA can hardly be considered as a recognised disease; it is rather a term applied sometimes to Choliasis, sometimes to

Anthrax, sometimes, perhaps, to a disease different from either. The various forms of Influenza ("Pink-eye," Epizoötic Cellulitis, etc.) are characterized by sudden and extreme prostration of strength, different from the gradual, cumulative effects of Liver Congestion. There is only one matter which I wish to notice as concerns the treatment of Liver Disorder, and that is *the use of sal ammoniac*, a remedial agent the value of which is not appreciated at home: it relieves congestion of internal organs, notably the liver, and acts beneficially on the blood in counteracting disintegration under the influence of bile salts. It may be usefully combined in slighter cases of Liver Disease with the indigenous tonic, chiretta.

The remarks which I have made about Colic in India being generally due to Liver Disorder, must not be misconstrued into negation of the importance of other kinds of COLIC. During the very dry weather we sometimes have difficulties about the water supply. This is obtained from a perennial well, and conveyed to the different water-troughs by pipes, the taps of which are turned on at certain hours. Under ordinary circumstances this is quite sufficient, and works very satisfactorily; but sometimes the natives who have to pump up water, give way to somnolence, and the supply runs short; at others the pipes burst, then supplies have to be brought from the various neighbouring wells in water-carts. From some wells the water is very good, but others are contaminated with decaying animal and vegetable matter, or drainage from rice-fields or villages. In spite of the greatest vigilance, the natives *will* obtain water from bad wells, and Anthrax has been attributed to this source. But the most important question here is *whether Colic is ever caused by animals being watered at different times from various sources.* Possibly it is; but there are other influences at work as Colic-producers about this time. Scantiness of drink in very dry weather may be one of these: certainly *horses in the hot weather, unless well looked after, are very apt to suffer from too little drink.* Again, the grass is now scanty, dry, and difficult to procure, and requires the greatest care in exclusion of coarse fibrous roots, which are liable to irritate the bowels, and to become so matted together as to give rise to Colic. It cannot be too much impressed on the minds of combatant officers, who have, under the advice of the veterinary surgeon, to examine the grass ration, that good Hariali or Dhub grass consists at this season mainly of *underground stems*, not roots: the latter are to be excluded from grass bundles as much as possible. Sometimes the bundles consist almost wholly of fleshy underground parts, which are moist, and contain much nutriment, doubtless; but horses refuse to eat them, on account of their bitter taste. About this time the tanks (artificial ponds) degenerate into stagnant puddles, and smell very strong of a mixture of decomposing vegetable matter, animal excreta, and the washings of dirty clothes. The drainage of those horrible stink-pits, or rather "traps," which occur at intervals around cantonments in India, and which are indicated by dry bones, ashes, broken bottles, and other ejecta, also finds its way into the tanks at which animals and men drink. In this horrible infusion the grass-cutter washes her bundle, and then, having repacked the grass, carries it to her hut, with the reeking odours of which it becomes still further impregnated, especially as fermentation commences in it during the course of the night. The next morning such grass is very apt to cause Colic. In gathering particles of grass from the floor of the standing, or under the influence of depraved appetite, horses are apt to pick up much sand; this is supplemented by round pebbles, small pieces of granite, etc., taken in with the grass when the latter has not been sifted with care, or has been washed in the water in which it is boiled. This "gravel" accumulates in the large intestine, especially the colon and the cæcum, where it is apt to remain for a considerable time, until at length enormous quantities have aggregated. The

most formidable result of this is rupture of the bowel, of which I have had one case in which it was a matter of importance to decide whence the gravel came—whether from sand beds, which the major of the battery made use of to prevent surface abrasions of the points of the hocks, fetlocks, hips, etc., from hard floorings and scanty supply of bedding-grass (Indian horses as a rule eat a straw bed), or from the grain not having been properly cleaned, or from a previous station before the horse came into the battery. The latter is not so improbable a source as might seem at first sight, because, as Veterinary Surgeon (First Class) Adams has clearly *proved*, sand may be retained for as long as eight months. Careful examination could only lead me to decide that all three causes were probably in operation; for I found, firstly, a large quantity of fine sand, probably of recent introduction; secondly, the characteristic spherical pebbles of the black cotton soil from which the coolthee (grain) had been raised; and, thirdly, granite fragments and splinters, often blackened by the action of the digestive juices, and rounded by mutual friction during a long period of subjection to intestinal movements. About the commencement of the wet weather horses begin to pass much sand in their fæces; sometimes this is preceded by slight Colic, in which cases oleaginous purgative doses are indicated. Whether the irritation of the lining membrane of the bowels by this gravel is a cause of skin disease has not yet been determined, but is well worth careful investigation.

We seldom make a *post-mortem* examination of a horse here without finding the lining membrane of the stomach more or less invaded by round worms—the *Spiroptera megastoma*. Some of the "abodes" of these round worms are very large, others only small hard tumours, from which, on incision, much dense pus escapes, in which, on careful examination, may generally be found a small worm. Doubtless the ravages of these parasites give rise to depraved appetite, and possibly they may cause Colic. But be that as it may, it is certain that occasionally very marked ill effects result from *Spr. microstoma*, as in the following case. An old cavalry horse fell away in flesh to a very marked degree; his dung was horribly foul, his appetite insatiable, and his movements were irregular and capricious. These symptoms continued through several months to gradually increase in intensity, and at length he died of Anæmia. No colicky symptoms occurred throughout the case. Autopsy showed the whole bilious portion of the gastric mucous membrane covered by a felting of minute round worms embedded in mucus. Indeed, *parasites in general are very frequent in India*, the most noteworthy, besides those above-mentioned, being *Amphistoma Collinsii*, *Strongylus armatus Echinococci*, *bots*, *Filaria papillosa*, and worm in the eye; also *Oxyurides* as passed *per rectum*. I have not found *Str. tetracanthus* and tape-worms so frequently here as at home. These numerous forms of animal life seem to be intimately associated with the system of feeding on fresh grass, but most Australians bring worms to this country with them. I cannot leave the subject of Colic without noting *the influence of runnah grass*—that is the dried "long grass" obtained from the open land around cantonments, preserved stacked in the battery straw-yard until required for use, either mixed (4 lbs. daily) with the green grass, or used instead when, towards the end of the hot weather, enough fresh grass cannot be procured. This runnah grass is very useful for feeding purposes, as consisting of an admixture of various species; but it is a most important matter to decide when is the best time for cutting it. The land-owners and contractors prefer that it be left late, until almost all the species have attained a maximum total bulk, and all except the latest have shed their seeds. This spent grass is little better than so much straw, from a dietetic point of view. So this year a committee on forage has been sitting, with a view to determining what best may be done with a view to obtaining good runnah, and being in future able

to dispense with those intractable nuisances, the women grass-cutters. The only outcome of this committee's work, as yet, seems to have been that our supply of runnah was better, as having been cut earlier. One practical objection was found, which, however, does not prove insuperable. Among the earliest species is the spear-grass, the barbed sharp awns of which penetrate the buccal membrane, and cause the animal to go off his feed, slaver, and swell below the jaw. These barbs require to be carefully removed from the membrane. Moreover, some slight cases of Colic seem to have been due to irritation of the mucous membrane of the alimentary canal farther backwards by them. While writing this, I was called to a case which proved instructive in several respects. It was one of RUPTURED STOMACH, the first I have had to deal with in this station. Its symptoms were well developed, when we consider them *post-mortem*. There was first of all an attack of simple Colic apparently, which seemed to yield to treatment, however; the pulse was forty-eight, and rather small. This was when the peritoneal and muscular coats gave way, allowing the more extensile mucous membrane to bulge through the rent. Several hours afterwards the animal plunged forwards, and fell dead. Then the mucous coat gave way, and the stomachic contents escaped, the solid into the omentum major, the liquid filtering through this into the greater peritoneal cavity. The cause of the mischief was very evident. The coats of the stomach were weakened by parasitic invasion at the seat of commencement of the tear. The stomach was even now full of dryish grass, consisting of masticated hariali, as taken during the night, and of very coarse runnah, chopped to pieces about one inch in length. The runnah had been given mixed with the feed to prevent the latter being "bolted," but it and the feed had been swallowed unmasticated. This short runnah had proved actively irritant, as denoted by the high colour of the lining mucous membrane of the stomach, and also by the fact that at a place where a compact mass of it had become impacted (where the duodenum crosses the spine) there was a high state of Congestion of the Bowels. When the animal drank his water in the morning the addition to the contents of the overladen stomach proved the "last straw," and its attenuated and diseased walls gave way. *Thus we have it proved that chopped runnah is worse than unchopped, for the latter must be masticated; and that Spiroptera in the stomach are a powerful factor in the production of some cases of rupture.* COOLTHEE, the pulse food used in this station, is the seed of *Dolichos uniflorus;* its grains when boiled resemble coffee-beans, and the water remaining is a rich gelatinous fluid, highly nutritious, and with an almost tempting smell, something like that of cocoa. There are two kinds of coolthee, the *black*, which we mostly get here, and the *grey or Bangalore* kind. The latter must not be mistaken for the immature seeds, which are devoid of colour, small, and shrivelled. Both forms are liable to contamination with stones, foreign seeds, immature and weevil-laden grain. The external coat is so tough that boiling is necessary to render the pulse digestible. When this has been done over a slow wood fire for five hours, the grain becomes one and a half its bulk. The coolthee water should just suffice to boil the grain. Generally in practice there is much left, which should be given to the horses, or such of them as will drink it. In some batteries it is given to the bullocks, and in others to the grass-cutters. Both bullocks and grass-cutters like it, and thrive on it, but the horses should not lose so much nutriment. I have not made a chemical analysis of "grain-water," but it sets as a thick rich jelly, and so must contain many valuable nutritive matters. I may quote a case in proof that it does. A Horse Artillery trooper suffered from Hæmaturia, a sequela of Liver Congestion, and, refusing all ordinary articles of sick diet, such as linseed tea,

bran mash, etc., was at last tempted with grain-water. He practically lived on this, in spite of the drain of blood from the urinary organs and Diarrhœa, which set in later, for three weeks. In a cavalry regiment, recently stationed here, cases of Ruptured Stomach were frequent. This was attributed to *the use of cooked food.* From the time of Professor Dick, it has been a subject of debate whether it is advisable to cook food for horses. The reason why it is done here, is that the total expense of purchase and boiling of coolthee is less in this station than that of purchase of Bengal grain (chenna). It is debatable whether this is not a penny-wise, pound-foolish system; for not only is there the greater risk of rupture of the stomach (and perhaps Liver Disorder), from the horses bolting their food; but on service in most parts of India coolthee is not procurable, and stomachs accustomed to cooked food, when called to digest uncooked grain, are liable to be upset. On the march through the Madras Presidency, generally several changes have to be made from chenna to coolthee, etc., etc. Some horses refuse to eat coolthee, but few, if any, reject chenna.

(*To be continued.*)

THE BORDER COUNTIES VETERINARY MEDICAL ASSOCIATION.

It is particularly gratifying to be able to announce that an Association with the above title has been formed, and that it is likely to prove a success, as it meets a want which has long been felt by veterinary surgeons in the Border Counties. Under the elected office-bearers, the first year promises to be interesting and encouraging.

Proceedings of Veterinary Medical Societies, &c.

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

(*Continued from page* 421, *vol. xvii.*)

5. Should a consultant find the ordinary veterinary attendant has misunderstood the case, or, it may be, committed a grievous error, he should, while doing his duty to the patient, endeavour to shield his brother practitioner from the obloquy and prejudice which are sure to be accredited to him for an error in judgment; for who, it may be replied, has not in the course of his professional life committed like grievous errors, of which the still small voice within is alone cognizant and the sole accusant.

6. When a practitioner is called to an urgent case in another's practice he should, when the emergency is provided for, resign the case; but he is entitled to charge the client for his services.

7. When a practitioner is called in to or consulted about a case under the care of another veterinary surgeon, he should on no account interfere (except in emergency), but request a consultation with the gentleman in previous attendance.

8. If the client is capricious and obliges his ordinary veterinary surgeon to relinquish his patient, and explains this to another veterinary surgeon, the latter is exempt from dishonourable conduct in taking up the case.

9. When a practitioner is consulted at his own residence, it is not necessary, but better, to inquire if the patient is under another's care, so as to arrange a consultation.

10. When a practitioner has officiated for, or been called in consultation by, another, and the ordinary veterinary surgeon has resumed exclusive

attendance on the case, the former should not under any pretext, friendly or otherwise, visit the case.

11. In case of accident or sudden illness, and neighbouring veterinary surgeon being called in, should request the usual veterinary attendant to be sent for, and at once resign the case to the latter on his arrival.

12. In like manner, when a veterinary surgeon is asked by another practioner's client to examine a horse as to soundness, if he can ascertain that the examination has already been made by his own veterinary surgeon, he should courteously but firmly insist on a consultation before expressing his opinion.

13. A retired practitioner should abstain from giving gratuitous advice, for to dispense with fees which may justly be claimed is defrauding the faculty, therefore unjust and unprofessional.

SECTION 6.—*The Duties of Practitioners when Differences occur between them.*

1. Publicity in cases of ethical disputes should be avoided, as generally society fails to understand or will not care to enter upon the merits of the disputants, and injury may be done to one or other of the parties; therefore it is better to refer to a Court of Veterinary Arbitrators.

I propose, though as a secondary consideration, that every veterinary medical association should appoint three of its members as an Ethical Committee for arbitration, with power to take their President into consultation, and, if necessary, to bring the matter before the members of the Association.

Where the disputants are not members of any association, a local Ethical Court could be formed, by reference to three practitioners being agreed upon as arbitrators.

In all cases of arbitration a written statement of the charges preferred, and a like answer thereto, should be required from the respective disputants, with such affirming or rebutting testimony as may be essential to elucidate the facts of the case; and after giving careful consideration to the evidence adduced, the members of the court should give their opinions in succession, beginning with the junior, so that he may not be influenced by the opinion of his senior.

As a rule, however, no arbitration should be undertaken until the accusant has, either in person or by note, communicated with the accused on the subject of complaint, and failed to obtain an explanation or redress.

It may here be well to repeat that experience and observation leave little doubt that, in numerous instances, professional differences arise from some misrepresentation or suppression of the truth (a fruitful source of the unhappy differences, heart-burnings, and jealousies, which too frequently disgrace our profession!) by clients or their friends, rather than direct unethical conduct on the part of the practitioners. Be that as it may, it is equally the duty of every one who thinks himself aggrieved, to dispassionately consider whether he really is so, for unhappily some men are so morbidly sensitive, suspicious, and jealous, that even were they to be associated with (so to speak) mundane angels, they would fancy their ground invaded, and their rights and self ignored. A medical man should ever be slow to admit that a brother practitioner has knowingly and intentionally wronged him; a little reflection and reasonableness would often suggest an explanation of conduct that, at first, may seem offensive or selfish.

Assuming, however, that he is really injured—that a neighbouring practitioner has acted unethically, and, mayhap, repeatedly so. What, in such case, is to be done? His duty is certainly, as yet, not to publish to the world his personal quarrel, for professional quarrels are discreditable, and not to

be lightly proclaimed. Moreover, when a man is clearly in the right, he can afford to exhaust all gentle means of remonstrance and redress; and, in strict accordance with both scriptural and professional ethics, he should either in person or by courteous note, "go and tell his brother his fault" privately. Should that fail, and the aggrieved party be ultimately obliged to refer the matter to the arbitration of a mutual professional friend, or to a "Court Medical," even then his object should be, not that the offender should be "shunned," but effectually rebuked and convinced of his error. Such object is, in many cases, more likely to be gained by private than by public means. But, as there are men in the veterinary, as in other professions, who can only be effectively influenced by public censure, under certain circumstances the action of the Ethical Court would be a perfectly legitimate *dernier ressort.*

CHAP. III.—ON THE DUTIES OF THE PROFESSION TO THE PUBLIC, AND THE OBLIGATIONS OF THE PUBLIC TO THE PROFESSION.

SECTION 1.

1. It is the duty of the faculty, as good citizens, to be vigilant for the welfare of the community, especially to advise the public on matters appertaining to the profession, such as veterinary sanitary science and police, giving information as to regulations and isolation on the outbreak of infectious or contagious disorders;—also as to drainage, water supply, ventilation, etc., of the habitations of domestic animals, to ensure their health, the importance of which is daily increasing, as the knowledge of the communicability of diseases from the lower animals to mankind becomes more widely recognised.

2. Veterinary surgeons should always be ready to assist the legally-constituted authorities by enlightening them on matters pertaining to the profession—and not least of these is the prevention of cruelty to animals. This is of importance, inasmuch as the prosecutors are often led away by sentiment, kindly meant but erroneous, from their ignorance of animal organization, hence the value the authorities attach to a veterinary surgeon, which should be jealously upheld by strict adherence to truthful testimony. A skilled witness should never allow his personal feelings to overcome his sense of justice.

The fee for attendance in Court is often inadequate, and it may be prudent for a practitioner to stipulate for a specified fee, as is the rule with counsel.

SECTION 2.—*The Obligations of the Public to the Profession.*

The public ought to entertain a just appreciation of a veterinary surgeon's qualifications, obtained by a long course of education, apprenticeship, and study, involving time and money, without the slightest aid from the State. How much has been done in the suppression of contagious diseases such as Glanders, Mange, etc., the improvement in ventilation of stables, saving of horses' feet from mutilation by the diffusion of knowledge—the outcome of persevering veterinary research.

They (the public) should discountenance the employment of charlatans and assuming dabblers in medicine, and also the use of quack remedies and advertised secret nostrums, which too often have a baneful influence on the dumb sufferers, and are ignorantly and injudiciously used, even to the sacrifice of animal life, and therefore are a public fraud.

CHAP. IV.—THE RULE OF THE PROFESSION ON COMMENCING PRACTICE.

1. A practitioner in commencing business should call on all the local practitioners, and courteously announce his intention of settling in the

neighbourhood, and should encourage social intercourse and friendly feeling for his own good and the professional welfare.

Gentlemen,—Having now introduced the subject of Veterinary Ethics, I leave the matter in your hands for discussion; and I hope the first Ethical Committee will be formed in our Association, and to-day, to consider the advisability of introducing a code of rules which may be recognised by the profession, and to invite the co-operation of the National and the other Veterinary Medical Associations in carrying out the ideas suggested.

I have to thank you all for your very courteous attention to what, I fear, has been of necessity a dry subject.

Captain RUSSELL had listened with very great pleasure to Mr. Stanley's essay, in the sentiments of which he fully concurred. It was advisable to form a Committee to prepare a code of rules for consideration at a future meeting. He hoped that no member of the Association would have occasion to bring any matter before the Consultation Board. They could not expect, however, to find every one working for the common good. He hoped to see greater harmony among members of the veterinary profession and more regularity in regard to fees.

Mr. GREAVES was deeply grateful to Mr. Stanley for his able paper. The subject had been handled in a gentlemanly manner, and much could be learned from it respecting professional ethics. He enquired if the meeting considered it would be in accordance with professional etiquette for a member of the Royal College of Veterinary Surgeons to hold a consultation with a registered practitioner.

Mr. E. STANLEY considered that in the interest of their patients such consultations were advisable, but the matter must be left to individual tastes.

Mr. GREAVES expressed his approval of the formation of a committee to frame a code of ethics.

Mr. MEEK thought members would do well to "read, mark, learn, and inwardly digest" the paper, and try to act up to the standard therein laid down.

Mr. PROCTER felt that the essay was a useful guide, but feared that the formation of a court of enquiry would be fraught with mischievous consequences.

Mr. BLAKEWAY confessed that on seeing the subject on the agenda paper he had an apprehension that it would diminish the attendance that day. It was a question of vital importance. How often men in high positions bribed the coachmen in order to get employment, and when called in for a consultation, they tried to supersede the regular practitioner. How often gentlemen were seen in the law courts, condemning the conduct of their brethren who performed operations necessary for the patient and beneficial to the owner. It must not, however, be supposed that members of the Royal College of Veterinary Surgeons were the only professional gentlemen whose conduct needed reform. (Hear, hear.) He knew a medical man who, on being called in to see another's patient, denounced the treatment as radically wrong before he had heard what the treatment was. Another said to the client of a brother professional, "I should have thought that your attendant believed you to be a man with a deep pocket, and wanted to make a purse out of you." (Laughter.)

Mr. PARKER added his meed of praise to Mr. Stanley, for the care and ability he had displayed in preparing an essay which was calculated to be of great benefit to the profession generally. He deprecated laying down a hard-and-fast line of professional ethics.

Mr. TIPPER was opposed to the formation of an ethical board. It was not expedient to restrict individual liberty. When the proposed code of ethics

came into general operation, he should expect to see the lion lie down with the lamb and the millennium dawning. Some portions of Mr. Stanley's paper required to be answered by an essay.

Mr. H. STANLEY urged that the importance of the subject could not be overrated. He was especially desirous of seeing the number of consultations increased, believing that, as in the sister profession, it would result in greater success. He considered that if proper attention was given to the paper, it would prove more useful than many of the papers that had been read on special diseases.

The PRESIDENT hoped that Mr. Stanley's paper would be fully published in the veterinary journals, and that members would bring it under the notice of their clients, that they might see what manner of men veterinary surgeons were. Their desire was to act up to Mr. Stanley's standard; let the public know that theirs was a noble profession, and one which aimed at relieving the sufferings of the brute creation. He feared that few members would be inclined to appeal to an ethical board, and suggested an umpire as the less objectionable alternative. He regretted that good people were so ready to bring charges of cruelty to animals for docking horses' tails, and thought that some of the heads of the profession outstepped the bounds of discretion by their frequent appearance in the law courts. He concluded by proposing a vote of thanks to Mr. Stanley for his admirable paper.

Mr. OVER seconded the proposition, which was carried with acclamation.

Mr. STANLEY, in acknowledging the compliment, said he was a little disappointed at the meeting not having taken some steps for preparing a code of rules for the guidance of the profession. They might submit such a code to kindred associations. He disclaimed any intention of constituting a few members into a judicial committee.

Mr. GREAVES understood that the essay did not contain a code of rules.

Mr. STANLEY replied that he had prepared it in the form of a code.

Captain RUSSELL proposed: "That the President and two senior members of the Association do form a Committee to consider the desirability of drawing up a code of rules of professional etiquette for the consideration of other associations, and report progress at the next meeting."

Mr. H. STANLEY seconded the motion.

Mr. TIPPER considered that if rules were framed they must be compulsory, and that compulsory rules such as those suggested by Mr. Stanley would break up the Association.

The proposition was negatived.

A telegram was read from Mr. Cox (5th Dragoon Guards), promising a paper at the next meeting on "Equine Asthma."

LINCOLNSHIRE VETERINARY MEDICAL SOCIETY.

THE quarterly meeting of the Lincolnshire Veterinary Medical Society was held at the "Peacock and Royal Hotel," Boston, on Thursday, November 1st, the following gentlemen being present: Captain Russell (Grantham), President, in the chair, and Messrs. Carless (Lincoln), Secretary, W. G. B. Dickinson (Boston), Hoole (Heckington), Mackinder (Peterborough), Runceman (Market Deeping), Wyre (Donington), and G. Whitworth (Grantham).

The CHAIRMAN expressed his sorrow that there was not a larger attendance, but said that no doubt he and the secretary were to blame because more gentlemen were not present. It had escaped their memory that the previous Thursday was the last Thursday in the month, and the one on which their meeting should have been held. Having discovered their mistake, they made all haste to hold the meeting as soon as possible, and no doubt

the alteration in the date had been inconvenient to some gentlemen, and had prevented their attendance. He and the secretary would take care that such an error did not occur again whilst they were in office. He hoped their meeting would be an interesting one, and that the paper they were to have at the hands of Mr. Whitworth would give them sufficient reward for their presence.

The SECRETARY then read the minutes of the last meeting, and they were confirmed. He said that with regard to Mr. Batchelor's proposition, made at their last meeting, respecting unqualified men being allowed to hold the appointment of inspectors, he had received a letter from Mr. Fleming asking him not to press the resolution, but to hold it over for a while; therefore he had done nothing in the matter, and as Mr. Fleming had promised to see into it himself, he thought they would be justified in holding it over until their next meeting, when they might have the question decided. Mr. Fleming had promised to bring the matter before the Privy Council himself, and that was the reason why he did not want them to press the resolution.

The CHAIRMAN observed that at a meeting of the Midland Counties Society, held at Leamington on the 20th of September, this matter was brought forward, and a large amount of discussion took place, and a quantity of correspondence was read, but nothing was done in the question.

Mr. MACKINDER said that the Act of Parliament only gave local authorities power to appoint a man, a veterinary surgeon, who was a member of the Royal College of Veterinary Surgeons, and who was registered; but in the Peterborough district that power had been overridden, and a man whom the College had refused to register was acting as veterinary inspector. He had not reported the circumstance to the Royal College of Veterinary Surgeons.

The CHAIRMAN recommended him to do so.

Mr. DICKINSON believed that the local authority had power to appoint whom they pleased, and the Privy Council could not interfere with them. They could appoint a policeman if they liked.

The CHAIRMAN said they could appoint any person to act as veterinary inspector during the Cattle Plague, or they could appoint any registered practitioner.

Mr. DICKINSON observed that a policeman was appointed inspector in the Boston district, and he could perfectly understand what it was Mr. Mackinder was referring to. He had mentioned it to one of the Privy Council veterinary staff when he was in Boston some time ago, and he said that whatever the local authority did, the Privy Council could not interfere with at all. It did not matter to the Privy Council if they appointed a policeman; they got the retaining fee, and the veterinary surgeons had to get what they could. They were entirely at the mercy of a policeman, and he thought it a great shame that they should be. He had not been called in to one-fifth of the cases in his district.

The CHAIRMAN said that at Grantham all the cases of Foot-and-mouth Disease were left in the hands of a policeman to report when they were convalescent.

Mr. DICKINSON said it was the same at Boston, and the policeman declared places infected and free just as he liked. And that was not all: he allowed their accounts—he examined them and initialed them before the local authority paid them.

Mr. RUNCEMAN said that the profession had it in their own hands—they could strike work. Unfortunately there was too much ill-will afloat, or they could make the Privy Council, or any bench of magistrates in England, come to terms.

The CHAIRMAN remarked that, supposing they were to strike, and were to

send in a petition to the magistrates of the division asking them to reconsider the appointment, they would tell them that there were other applicants for the office.

Mr. RUNCEMAN observed that that was what he meant when he said that there was too much ill-will afloat. It was of no interest to him, but if he were the profession he should strike *en masse*. It was no use blaming the magistrates or any one else: they had the profession to blame, for if one would not do the work another would.

The subject then dropped.

On the proposition of Mr. HOOLE, seconded by Mr. WHITWORTH, Mr. Goforth Wyre, of Donington, was unanimously elected a member of the Society; and on the proposition of Mr. CARLESS, seconded by Mr. DICKINSON, Mr. H. Hall, of Burgh-le-Marsh, was elected a member.

G. Fleming, Esq., Prof. Walley, Prof. Robertson, and T. Greaves, Esq., were elected Hon. Associates of the Society.

The CHAIRMAN next called upon Mr. Whitworth to read a paper entitled, "What Part do Minute Organisms Play in Disease?"

Mr. WHITWORTH, in reading the paper, said: Mr. President and Gentlemen,—I purpose offering for your consideration to-day a few remarks on this all-important and engaging subject. It was my intention to have treated the matter more fully, but circumstances would not permit, yet I trust I shall offer sufficient food to bring about an earnest debate. The pathogenesis of disease is a subject which doubtless occupies many of your thoughtful moments, being, as it is in numerous instances, involved in labyrinthian obscurity. Scientists have from time to time speculated in various theories. The one most in favour at the present time is, as you know, the germ theory; the experiments which have been made by its specialists, demonstrating the correctness of their views, are most beautiful and praiseworthy. Yet when we consider some of them in detail they are found wanting. Perhaps I shall do well by selecting bacillus anthracis as a fair example. This life-form is said to have the property of producing the disease we know by the name of Splenic Fever, and without doubt, when these organisms are removed from an animal which is the subject of this malady, and introduced into the system of a healthy one, the chances of its not becoming affected with the identical disease are indeed very remote. This being so, are we to take it for granted that the bacilli are the sole factors in the production of the malady? What has the renowned Pasteur and others shown? Why, that after the process of taming, the bacilli become inert in the way of disease producers. Yes, but to my mind they have shown us more, which is the pith of matter I am privileged to-day in bringing before you. What a strange anomaly, that an organism said to be possessed of such specific properties should be rendered *hors de combat* by being put on such good diet as chicken bouilli! The microscope reveals to us the fact that the bacilli have not undergone the slightest physical alteration during the process of attenuation. I think that if you follow me a little further we shall be able to see how it is this change in property is brought about. I look upon these organisms, from the lowest to the highest, simply as nature's scavengers, acting in accordance with the law of prey. The medium in which we exist is teeming with them, waiting as they are for their nidus. They most certainly have selective power, for that can be easily demonstrated by preparing organic solutions of different compositions; and after exposure to the atmosphere for a certain length of time, it will be found that not one organism alone exists in all the solutions. This being so, need we be amazed at finding different organisms in different diseases, consuming the metamorphosised tissues and fluids of the body, and the specific virus of the disease for which it has affinity? If a healthy animal be inoculated with some of these organisms, it is

almost certain that the same disease will result. But how is this brought about? Not, in my opinion, by any specific properties of the bacillus, but by simple excretion of the virus of the disease with which it has been in contact. Does not the process of taming support this view? After a series of cultivations the once fatal bacillus is rendered inert. Yes, because it has eliminated the hurtful matter that was resident within it. If this view be correct, you will ask, how do you account for the origin of communicable disease? Most maladies, as you know, require a combination of agencies to induce them, but the class of disease of which we are treating require but the one unchangeable and specific means, namely, contagion. The true nature of the principle yet remains a matter of speculation. If I may be so bold as to offer an opinion, I would say it is a volatile—sometimes fixed—poison, produced by chemical processes, with or without organic influences, and this not always completed outside the body, but waiting in the atmosphere or elsewhere for blood in a favourable condition for the completion of its direful mission. It is now, in my opinion, that the so-called germs of disease commence their attack, but, instead of producing, they are removing the products of disease, and the *materies morbi* which primarily caused it. As to the varied degree of potency and mode of manifestation, this is no more a paradox than the difference in the operation of snake poison, woorara, cyanogen, etc. This is the vast problem which science has yet to strive at, but, alas! most probably she will have to rest content with that which has been given her, and reflect upon the wonders wrought by the Omnipotent One.

An interesting discussion followed. On the proposition of Mr. CARLESS, seconded by Mr. HOOLE, a vote of thanks was accorded Mr. Whitworth for his paper.

On the proposition of Mr. CARLESS, seconded by Mr. RUNCEMAN, it was resolved that the next meeting be held at Peterborough.

Mr. MACKINDER promised a paper on "Anthrax."

The election of officers will take place at the next meeting.

THE BORDER COUNTIES VETERINARY MEDICAL SOCIETY.

A PRELIMINARY meeting of the members of the veterinary profession located in the Border Counties was held at Carlisle, in the Bush Hotel, on the 1st ult., at which the following gentlemen were present, viz.:—Messrs. Joseph Carlisle, John Bell, James Bell, Benjamin Hoadley, Jacob Dawson, Carlisle; Henry Pears, Joseph Robson, Penrith; John Tallentire, Skelton; Henry Pears, Langholm; James Chalmers, Longtown; Henry Thompson, Aspatria; John Little, Abbey Town; and Joseph Donald, Wigton.

On the motion of Mr. THOMPSON, seconded by Mr. PEARS, Penrith, it was unanimously agreed that Mr. Joseph Carlisle take the chair.

The CHAIRMAN then called upon Mr. Thompson, who read letters of apology from the following gentlemen, regretting their inability to attend:—I. Tait, Annan; A. Sisson, Gosforth; W. Faulder, Cockermouth; John Soulsby, Workington; Andrew Pender, Lockerbie; R. B. Patterson, Dumfries; John M. Watson, Ireby; Joseph Little, Alston; W. Summers, Allendale; and John F. Thompson, Aspatria. Many of these gentlemen expressed themselves very decidedly in favour of establishing a Society, and promised to become members.

After the letters of apology were read, the Chairman invited an expression of opinion as to the propriety of establishing a Society. Several of the company spoke of the benefits to be derived from such societies—by bringing brother practitioners together—by promoting a good and friendly feeling among the members—by interchanging ideas on matters of every-day practice, and so forth. The meeting seemed at one, as to the desirability

of an Association, and on the proposition of Mr. JOHN BELL, seconded by Mr. PEARS, and supported by Mr. THOMPSON, it was unanimously resolved that this meeting form itself into a Veterinary Society, and that it be known as the Border Counties Veterinary Medical Society.

It was then proposed by Mr. THOMPSON, seconded by Mr. PEARS, Langholm, and carried unanimously, that Mr. Joseph Carlisle be elected President for the year. It was then proposed by Mr. TALLENTIRE, and seconded by Mr. HOADLEY, and carried unanimously, that the following gentlemen be elected Vice-Presidents : Jacob Dawson, Carlisle ; John Bell, Carlisle ; James C. Soulsby, Whitehaven ; and Joseph Robson, Penrith. Mr. HOADLEY proposed, and Mr. DAWSON seconded, that Mr. Thompson, Aspatria, be elected Treasurer ; carried unanimously. Mr. PEARS, Langholm, proposed, and Mr. JAMES BELL seconded, that Joseph Donald, Wigton, be elected Secretary ; carried.

After some conversation on the advisability of admitting agriculturists as members, it was finally decided, on the motion of Mr. TALLENTIRE, seconded by Mr. HOADLEY, to confine the membership to qualified veterinary surgeons.

The Rules of a few veterinary societies were submitted for approval, and after several suggested alterations it was finally decided, on the motion of Mr. THOMPSON, seconded by Mr. DAWSON, to leave the drawing up of a Code of Rules in the hands of the office-bearers.

It was next proposed by Mr. THOMPSON, seconded by Mr. DAWSON, that each member pay an entrance fee of 10s. 6d., and an annual subscription of 5s. Subscriptions to fall due on the first of January.

It was very generally thought that the first meeting should be held in January, 1884, and that the members should dine together after the meeting. The date of the first meeting and the subjects to be brought forward were left in the hands of the office-bearers to arrange for.

It was further resolved that the minutes of this meeting be printed, and that a copy thereof be sent to all members of the profession located within the Border Counties, with an invitation that they become members of this society.

All gentlemen making application to the Secretary, by letter, on or before the next meeting of the Society, will be admitted as members without any formal election by vote or ballot, and will be enrolled as such on conforming with the rules of the Society.

A very cordial vote of thanks to the Chairman concluded the meeting.

After the conclusion of the above meeting, the members held a conversational meeting, at which several interesting topics were introduced relative to veterinary science and practice, which were freely commented on and profitably discussed by the company.

The meeting dispersed about 7 p.m., highly pleased with their prospects of success.

J. DONALD, *Secretary.*

THE NEW VETERINARY COLLEGE, EDINBURGH.

(*Continued from page* 458, *vol. xvii.*)

The noble CHAIRMAN said he would be failing in his duty, not only to Professor Williams and those present, but also to the Highland Society, a deputation from which he headed that day, if he did not express to Professor Williams his hearty congratulations on the success of the present undertaking so far as it had gone—(applause)—and he could assure him of their hearty support—(applause). Professor Williams had referred to the interest the Highland Society took in veterinary science, and it was due to that society to say that they appreciated what he said, and that the thanks of Scotland

were due to the society for what it had done—(applause). The Highland Society had taken the greatest interest in the veterinary profession, and in fact for a long time it was the only body in Scotland which gave certificates to members of the veterinary profession. He was sorry to say that owing to recent legislation it was no longer in their power to give these certificates. It was not for him, in that place least of all, where every one took an interest in veterinary science, to enlarge on the advantages the sciences must confer on the community, but he thought they must all feel the enormous benefits which would arise to the country if it continued to be conducted on a more scientific basis. Referring to Professor Williams' remarks as to the spontaneous generation of disease, his Lordship said that his own conviction was that there was no such thing as spontaneous generation of disease, but that the different influences which occur to the bodies, whether of man or beast, put them in a condition to be attacked by those diseases—(applause). Many would agree that there might be a difficulty in believing in the spontaneous generation of disease. Let them look, for instance, at the discoveries in connection with the sheep plague in France. Many thought for a long time that it was spontaneously generated, because sheep were put into apparently healthy pasturages and were attacked by the disease ; but it was afterwards found that the carcases of diseased sheep had been buried deep in the ground, and the action of earth-worms in bringing up diseased portions to the surface had caused the disease—(applause). He believed, except in disease that might be due to accidents, that every form of disease to which animals were subject was due to distinct forms of organism in the animals themselves—(applause). He thought there was a tremendous scientific interest open to all who embraced the profession for which this college had been built. There could be nothing more interesting than the hard good work which Professor Williams had pointed out to them as the way to success. Nothing could be a greater inducement for them to persevere than the knowledge that they were conferring benefit not only on the brute creation, but on the human race—(applause). His Lordship concluded by intimating apologies from Lord Balfour of Burleigh, The Lord President of the Court of Session, Sir William Baillie, Bart. ; Sir Henry Seton Steuart, Bart. ; Sir Alexander Kinloch, Bart. ; Professor Wilson, Mr. Walker of Bowland, Mr. Irving of Drum, Mr. Russell of Dundas Castle, etc.

On the motion of Mr. CONNOCHIE, V.S., Selkirk, a vote of thanks was given to the chairman, and the proceedings terminated.

A description of the new College has already appeared in our columns, but it may be mentioned that Mr. William B. Lyons, the contractor for the plaster and Portland cement work, has, in the case of the college, introduced into Scotland for the first time the lithite concrete, which is made of gravel taken from the Threlkeld mines of Cumberland and the very best quality of Portland cement. This lithite stone is obtained from a quartz mine, and being combined with mica schist and hornblende to the extent of 15 per cent., it has a high degree of hardness, and is calculated to resist great weight. The former has the hardness of seven, while the latter is five to six, being thus equal in hardness to any granite. The close compact nature of this gravel-stone supersedes granite by weight eight pounds per cubic foot. All the loose boxes, stables, byres, bath-room, and extensive quadrangle have been laid with this lithite cement, which amounts to 2000 superficial square yards. This gravel has excellent properties for all concrete purposes, its fracture being angular, *i.e.*, the sharpness is not easily broken away when set within cement.

The Luncheon.

At two o'clock a luncheon, attended by 180 ladies and gentlemen, was held in the microscopic and chemical departments of the College. The Marquis of Lothian presided, and Mr. D. Salmond, Gawthorpe Hall, Bingley, Yorkshire, officiated as croupier. Grace was said by the Bishop of Edinburgh. In proposing the health of Professor Williams and success to the institution, the noble CHAIRMAN said he admired the energy and skill which had raised Professor Williams to his present high professional position. By the establishment of this College he felt sure that veterinary science in Scotland would be advanced more than ever. (Applause.)

Professor WILLIAMS, in reply, said, although he stood there at the head of a rival institution to the Dick Veterinary College, no man in the profession had a more sincere respect than himself for the memory of Professor Dick. (Applause.) He was a man worthy of all honour. He was the founder of the veterinary profession in Scotland, and the father, professionally, of the best men in Scotland, while his students were to be found at the head of the foremost colleges of the world. (Applause.) He revered Professor Dick's memory, and he intended to show his respect for the man by witnessing the unveiling of his statue that afternoon. (Applause.) The sculptor did not know the late Professor, and he (Principal Williams) was glad to have been able to assist Mr. Rhind in producing in stone the admirable likeness which would be disclosed to their view that day. (Applause.)

The proceedings then terminated.

Complimentary Dinner to Professor Williams.

In the evening Professor Williams was entertained to dinner in the Waterloo Hotel by his professional brethren and a number of friends. Between sixty and seventy gentlemen were present. Mr. John Borthwick, V.S., Kirkliston, occupied the chair, and was supported by Professor Williams, Mr. Paterson, V.S., Dumfries; Mr. Scott, factor for Mr. Hope Johnstone of Annandale; Mr. Baillie, Edinburgh; Mr. Walker, Bradford, etc. The croupiers were Mr. R. Rutherford, Secretary of the Scottish Metropolitan Veterinary Medical Society, and Mr. Cunningham, V.S., Slateford. Blessing was asked by the Rev. Mr. Overend, Edinburgh, and after the usual loyal and patriotic toasts—the latter being responded to by Mr. Phillips of the 3rd Dragoon Guards, Mr. Robinson, Greenock, and Mr. Ivison Macadam—the CHAIRMAN, in proposing "The health of Professor Williams and success to the New Veterinary College," said—Professor Williams came to this city some seventeen years ago as successor to the late Professor Dick, who was the founder of the first veterinary college in Scotland. All honour to his memory; he was a great man in the veterinary profession, and he has left his mark. We have met here this day to celebrate the opening of another Veterinary College, and I think you will agree with me when I say that it is second to no other in the kingdom. (Applause.) It has been founded, as the first was, by one man, without State or any other endowment, and it is under the sole control of its founder. (Applause.) Professor Williams has had difficulties to contend with, but he has borne up and overcome them all, and they have been crowned with the success he so thoroughly deserves. (Applause.) This is shown to us by the commodious and elegant building he has erected, the large number of students enrolled (164), and the friends and members of the profession assembled here this day to do him honour. I will not in his presence give expression to all I would like to say regarding him, but permit me to say this, that I, along with my professional brethren here, and I believe throughout Scotland and England, have always had the greatest pleasure in meeting him, especially in consultation. His opinion and advice, which are so kindly and freely given, we can rely

on, and no one has done more to raise the status of our profession. (Applause.) May he be long spared to go out and in amongst us and enjoy the fruits of his labour. (Applause.) I ask you to drink to Professor Williams, and success to the New Veterinary College.

The toast was drunk with all the honours.

Principal WILLIAMS returned his sincere thanks for the honour done him by his professional brethren from all parts of Scotland, and from many places in England, who had assembled to do honour to one of themselves, a veterinary surgeon and nothing more, for he felt proud of his profession (applause). It was a proof that they would always honour the profession to which he belonged, and he thought that marked a great step in advance (applause). The gathering that night, of men from great distances, impressed him with the conviction that if a man did his work honestly and conscientiously his brethren in the profession would respect and esteem him (applause). Throughout the whole of his career his endeavour had been to elevate his brethren in the profession. He had never yet taken advantage of a mistake made by a professional brother—(applause)—and the result was the gathering that night. He saw around him gentlemen who were examiners when he was a student, and he saw one gentlemen (Mr. Hallen) who preceded him in Professor Dick's chair, and to whom in a great measure his success was due (applause). He was also proud of having won Mr. Hallen's prize for practical pathology, which, during his many troubles, had greatly consoled him, and he was pleassd to see the donor present that evening (applause). It was also a great pleasure to him to see present so many gentlemen who had studied under him, and who were being successful in the world—(applause). He thanked them, his "boys," as he liked to call them again, for what they had done that day, and which he would never forget—(applause). He would mention, in conclusion, that the profession had a true friend in the Highland and Agricultural Society of Scotland, whose friendship he had experienced for seventeen years. Some thought the society meddled too much with their affairs, but he would remind them that in 1823 Professor Dick lectured in Niddrie Street, Edinburgh, to a solitary student, when the Highland Society took him up and encouraged and supported him, the result being that they had now three colleges in Scotland, all in a flourishing condition. He (Professor Williams) had been told that he was a plucky individual in erecting his new college, but what was that compared to the courage of a man who could lecture for three years to a single student? He again thanked them most heartily for their kindness to him that day.

Mr. FINLAY DUN gave "Continued Prosperity to the Veterinary Schools," and in doing so dwelt at length on the great improvements that had taken place in the schools during the last thirty years, and stated his belief that the British colleges now possessed preceptors who would turn out thoroughly trained young men, second to none which the world had produced—(applause). He coupled the toast with the name of Professor Lewis, of the New Veterinary College, who suitably replied.

Mr. CUNNINGHAM, Slateford, proposed "The Royal College of Veterinary Surgeons," and passed some strictures on the management of that body. Of the Council and office-bearers, one was from Ireland, two from Scotland, and twenty-eight from England; while the great bulk of the examiners were also selected from the other side of the Tweed. He paid a warm eulogium to Professor Williams' treatment of his fellow-students, and concluded by coupling the toast with the name of Mr. Cartwright, Wolverhampton.

Mr. CARTWRIGHT, in reply, assured them that the Royal College had the interests of the profession at heart. He hoped next year to see more Scotch representatives returned to the Council Board, and they would have his hearty support—(applause.)

Mr. F. H. HALLEN, of the Indian Army Veterinary Department, proposed "The Highland and Agricultural Society of Scotland," through whose co-operation with the veterinary profession the losses through disease in flocks and herds were very much lessened. When in charge of the Clyde Street College he had received the greatest support from the Highland Society, and having now returned from abroad he was gratified to find that that society was still assisting all three veterinary colleges in Scotland, and was thus more than ever furthering and developing veterinary science—(applause). The certificates of the Highland Society were always received by the public as a guarantee of the holder's qualifications, and it was owing to that certificate that he had travelled so far—(applause).

Mr. F. N. MENZIES, secretary of the Highland and Agricultural Society (whose name was coupled with the toast), said it had been his privilege to be associated with Professor Williams for many years, and during all that time they had never differed in opinion, for he always felt that in Professor Williams he had a man on whom he could thoroughly rely—(applause).

Mr. SPREULLE, Dundee, proposed "The Board of Examiners," which was acknowledged by Mr. A. ROBINSON, Greenock; Professor VAUGHAN gave "The Sister Profession," to which Dr. HUNTER, Edinburgh, replied; Mr. F. N. MENZIES proposed "The Health of Mrs. Williams and Family," which was responded to by Mr. W. OWEN WILLIAMS; Mr. CONNOCHIE, Selkirk, proposed the health of the Chairman; and the Croupiers having also been duly toasted, a pleasant and enthusiastic meeting was brought to a close about ten o'clock.

THE NORTH OF IRELAND VETERINARY MEDICAL SOCIETY.

(*Continued from page* 432, *vol. xvii.*)

In *Pleurisy*, general venesection is only warranted in the earliest stages; it can be of no avail when inflammatory processes are thoroughly established. In cattle I have seen it when associated with stimulants and external irritants give almost instantaneous relief, and both in these animals and in the horse where the pleuritic inflammation has extended day after day in spite of all treatment I have frequently seen the introduction of one or more setons or rowels over the region of the inflamed part arrest the disease as if by magic, and I would have you bear in mind that the usual action of such remedies, viz., suppuration, could have had no influence here—the relief being too rapid—it can only be attributed to local blood-letting and the revulsion of nervous energy.

In Heart affections blood-letting must be very carefully had recourse to. In Pericarditis I have never seen any good result from it, except in very acute sthenic cases accompanied by a hard wiry pulse or great vascular engorgement and dyspnœa. Indeed, it may be said that venesection in cardiac affections generally is only warranted when these conditions exist, as in very many forms of Heart-disease syncope immediately follows the abstraction of large or even moderate quantities of blood.

In affections of the Alimentary Organs venesection is of great use to us. In Gastric Indigestion of the horse, associated with Cerebral Congestion, and in Gastric Tympany (when very frequently the administration of medicines is dangerous), more especially when there is marked dyspnœa and great venous turgescence, it should never be neglected. Ordinarily, carbolic acid, combined or otherwise with turpentine, will afford relief, but in desperate cases the regurgitation precludes the possibility of administering medicines; here venesection and the application of irritants to the epigastric region is all we have to rely upon, and they do not very often fail us.

Paracentesis is our great sheet-anchor in Enteric Tympany; in the horse unfortunately, we cannot utilize it in Gastric Tympany.

In acute Indigestion in the Ox from the ingestion of large quantities of succulent grasses, grass staggers, bleeding is only demanded when the pulmonary or cerebral circulation is interfered with, a full dose of salt with whisky usually effecting our object; but in Omasitis as the result of impaction I have often thought the operation favoured the action of medicines and warded off or arrested inflammation.

In Phlegmonous Enteritis in the horse free venesection is of great value, especially if chloral hydrate and opium are administered simultaneously, and the same may be said of *Acute Sthenic Peritonitis* in the early stages.

In Constipation of the Bowels venesection may favour the absorption of medicines but it is not usually indicated unless inflammation sets in; the administration of belladonna when the constipation is due to spasm: strychnine when due to paralysis; is all that is required, with the exercise of patience. When no inflammation exists a stimulating cathartic should be administered at the outset.

In Spasmodic Colic, where the pain is desperate, when medicines give no relief, or when, indeed, they cannot be administered, bold venesection immediately reduces the spasm.

In Metritis and Nephritis I have not seen any benefit result from venesection, but in *Acute Uræmia* (wrongly called Azoturia) in the horse and in *Parturient Eclampsia* in the cow, it is of great value when judiciously employed. In the former affection it should only be had recourse to when the pulse is very strong and full and when convulsions are threatened; then, aided by chloroform or the subcutaneous injection of atropine, we may expect, and practically do derive, much benefit from it.

I have observed that the term Azoturia is a misnomer; it simply indicates that there is an excess of nitrogenous elements in the urine thus perpetuating the vicious system adopted so largely in the nomenclature of diseases of designating a disease according to some prominent symptom. In last month's *Veterinarian* you will find an article on this subject from the pen of Professor Axe; he, too, condemns the use of the word Azoturia but substitutes an equally meaningless one (pathologically) viz., "Hæmatinuria," and he further endeavours to prove that the disease is really *Albuminuria.* Now, in all the specimens of urine I have examined, as well as in those which I have submitted to Dr. Aitken for examination, no albumen has been discovered; on the contrary, ureaic and hippuric compounds have been present in abundance; moreover, the urine has often a distinctly ammoniacal odour. The history of these cases their course the symptoms and the macroscopical conditions all point to one thing, and that is, a *poisoned condition of the blood itself;* whether the toxic agent is ureaic in character or simply results from imperfect oxidation or accumulation of products of oxidation or of biliary matters, remains to be proved. I am of opinion that the liver is more at fault than the kidneys, seeing that, as a rule, the disease occurs in highly plethoric animals and is associated with icterus, more or less pronounced. Under these conditions eliminatives and stimulants, with stimulating cathartics, are called for, and in addition the bladder should be frequently washed out with an alkaline solution.

While venesection is indicated in *Hepatic affections*, accompanied by great pain and vascular excitement, it is contra-indicated when the pulse is soft and weak when the animal's condition is low and icterus is marked.

Lastly, venesection as a remedial measure has been much extolled in Inflammatory Œdema (Weed). I have put its supposed virtues in this affection to the test very frequently, and I must confess that in my hands

the results following its adoption have not been encouraging. In the early stage I usually administer a bold diffusible stimulant and diuretic, apply with friction a moderately-stimulating and anodyne liniment to the skin of the inside of the thigh, with hot fomentations and bandages; and as soon as possible give exercise, apply cold water, and administer potassic iodide with ammonia carbonate.

Inflammatory Œdema.

I cannot dismiss the subject of *Inflammatory Œdema* without briefly noticing its pathology. As in the case of Acute Uræmia, so in this disease a synonym (Lymphangitis) is usually employed, which is absolutely misleading. To Haycock we are indebted for the application of the term Lymphangitis, but he based his theory solely on the *post-mortem* conditions observable in old-standing cases, viz., the thickened and sometimes occluded state of the lymphatic vessels, and the enlargement and induration of the glands. As well might he have said that the Lymph-adenitis of zymotic Pleuro-pneumonia, or the Lymphangitis associated with old-standing ulcers of a specific character are the causes, not the results, of the diseases which they accompany.

Inflammatory Œdema, as observed in horses, differs not from allied conditions in other animals, as *e.g.*, the acute Urticaria of man, the horse, and the dog, the blain of cattle or acute intestinal effusion in the horse; and it is the analogue of the swelling of the limbs seen in Effusive Fever (Pink-eye) of the latter animal.

The actual cause in each case is to be sought in the vital fluid which, from mal-nutrition, becomes incapable of nourishing the intimate structures of the delicate coats of the capillary vessels; thus rendering them, in their turn, incapable of withstanding the pressure of an overcharged circulation. That the blood in its altered condition has an injurious influence upon the lymphatic glands and vessels, I do not deny, and that this injury is perpetuated, especially in the case of repeated attacks, is equally certain; but if the disease were primarily and simply Lymph-adenitis and Lymphangitis we would certainly get some of the natural results which follow inflammation of these structures from other causes. Whether the cause of an inflammatory œdema be a ferment, as in Effusive Fever, a superabundance of or an altered condition in the blood plasma or the presence of some deleterious material in the blood itself, is a matter of indifference, the physical results are the same, viz., an altered condition of the walls of the capillary vessels, rapid transudation of lymph, irritation of the connective-tissue elements and disturbance of their nutrition, with desperate attempts on the part of the lymphatic vessels to get rid of the transuded fluid; the altered condition of this fluid giving rise, secondarily, to adenitis and to interstitial cellulitis, the latter resulting ultimately, especially after repeated attacks, in elephantiasis —a condition wrongly attributed by some veterinary authorities to organisation of the effused lymph.

The localisation of the lesion in the limbs or in a particular limb is purely accidental, and is not determined by any fixed law except, indeed, in those cases where some inherent or acquired tissue-weakness exists in one or other of the extremities; that the hind legs should be most largely affected is easily explained by the unfavourable conditions as to circulation, in which they are placed and by the greater strain to which they are subjected during severe exertion, but that one limb is, necessarily, more liable to be attacked than another, is not in accordance with my experience and, given an inherent or pre-existent tissue-defect in these organs, there is no reason why the lesion should not be determined to the lungs or to the intestines as well as to the limbs; in point of fact, intercurrent Colic from enteric effusion (the swelling

simultaneously disappearing from the limb) is often seen. As showing the bearing of these remarks on the subject, the following cases, which recently came under my notice, may be cited. With me Inflammatory Œdema is almost every year a serious item in my daily work when horses are placed upon *new hay* or *rye-grass*, and with this Inflammatory Œdema Colic runs hand in hand.

In one stable this season four cases, in addition to several of Colic, occurred: in No. 1 the lesion commenced in two limbs and rapidly involved *all four*, the swelling being so extreme as to render destruction of the animal (an old horse) necessary; in No. 2 the lesion was localised primarily in the near fore leg, in a few days laryngeal effusion set in and continued to an alarming degree for three days; in No. 3 the localisation of the lesion was in the near hind limb and the horse (previously the subject of Immobilitie) died from Tetany; No. 4 ran the usual course. All these cases were undoubtedly due to an altered condition of the blood as the result of the state of chemical change going on in the hay at the time of its ingestion. Not a few cases of this description are associated with cephalic or saphenal phlebitis.

At the conclusion of Professor Walley's paper, which was listened to with well-merited attention, the discussion was spiritedly begun by Mr. Giffen, followed by Messrs. Dunlop, Kernohan, Bradshaw, Hedley, Johnston, Doris, and Chambers. The Professor in replying to the various points raised in the discussion, entered into minute and lucid explanations of these points.

A vote of thanks moved by Mr. CHAMBERS, and seconded by Mr. DUNLOP, was accorded the essayist, and replied to.

Mr. THOMPSON proposed, and Mr. GIFFEN seconded, that Mr. Reavy, of Newry, be admitted a member of the Society.

A vote of thanks to the Chairman concluded the business of the meeting.

H. R. BRADSHAW, *Hon. Sec.*

GLASGOW VETERINARY COLLEGE.

(*Continued from page* 463, *vol. xvii.*)

Attenuation by Heat.

But Pasteur was far from the only worker in this interesting field. When he was on the very threshold of his experiments on Splenic fever, M. Toussaint, of Toulouse, to whom I have before referred, announced that he had discovered that by subjecting the blood of an animal labouring under Splenic Fever to the action of heat, he not only deprived it of its fatal properties, but converted it into a vaccine, which on inoculation protected the animal against the effects of the strongest virus of the disease. On repetition of Toussaint's experiments, it was, however, found that in certain instances inoculation with the virus treated by his method produced the unmodified disease, while in others it was followed by no protective result. This effectually discredited his discovery for awhile. But his old master, Chauveau, had sufficient faith in him carefully to repeat his experiments, and he found that, while his mode of manipulation had been defective, the principle which he had discovered was correct. He showed that, by means of regulated heat systematically applied, the microbe of Splenic Fever could be attenuated much more rapidly and easily than by Pasteur's process, and that the modification produced by exposure to heat, although possibly not so permanent or reliable, was equally efficacious in the protection it afforded against subsequent attacks of the disease. The system propounded by Toussaint, and perfected by Chauveau, is stated to have been applied successfully in other diseases. Its general applicability, however, remains to be tested, but if it holds good generally, the method, as has been pointed out, possesses one important advantage. For in maladies where no mode of artificially culti-

vating a given specific microbe has yet been discovered, as in Cattle Plague, Pleuro-pneumonia, etc., the natural fluids in which the microbe swarms can still be treated by exposure to heat, and the possibility thus readily tested of producing a mild protective vaccine against the disease. But the discoveries of MM. Chauveau and Toussaint do not exhaust the work of veterinarians in this important branch of medical science.

The Maladie de Chabert.

There is another disease of cattle, invariably fatal, which was long confounded with Splenic Fever, but which was identified and described as a separate disease by M. Chabert, and is known by his name as the *Maladie de Chabert.* In that disease the microbe makes its way into the solid tissues, and there finds a congenial breeding-place, whence it extends and multiplies until its victim perishes. Well, three other pupils of the Lyons Veterinary School, MM. Arloing, Cornevin, and Thomas, discovered that in this disease, if the microbe, instead of being introduced into the solid tissues, where inoculation with even the smallest amount proves fatal—if it be thrown even in comparatively large quantities direct into the torrent of the blood, it not only proves harmless to the animal experimented on, but operates like a vaccine in protecting it against the disease. They discovered, too, that virus introduced into the air-passages produces the same results. I am not aware that any practical application has been made of the latter discovery, but the former—the intravenous injection of the microbe—has been reduced to a system: and in different parts of France and Algeria, where the disease is prevalent, many hundreds of animals have already been protected against it in this way. This proceeding has now stood the test of several years of trial, and only the other day the French Academy of Sciences, after a careful investigation at the hands of a distinguished committee, bore witness to the importance of the discovery by awarding its authors a prize of 5,000 francs. (Applause.) Hitherto, I have spoken only of work in the field of veterinary medicine carried to a definite conclusion, and, within the range of completed work, I doubt whether any other branch of medical science can show so much to boast of within anything like an equal period. (Applause.)

Is Consumption Infectious?

Before sitting down, however, I should like briefly to refer to two sets of investigations which illustrate more obviously than anything of which I have yet spoken the intimate connection between human and veterinary medicine. (Applause.) I allude to the recent researches concerning the intimate nature of tubercular or consumptive diseases, and of Hydrophobia—maladies common alike to man and the lower animals. A considerable number of years ago M. Villemin adduced a strong array of facts in connection with Tuberculosis in man, which went far to prove that it was a diseased condition dependent upon the invasion of the system by another microbe, and that the disease might be communicated from man to man and to certain of the lower animals. In 1881 M. Toussaint published several papers on the disease as it occurs in cattle. In these he demonstrated the readiness with which it could be transmitted from animal to animal by inoculation; showed the facility with which it might thus be unintentionally propagated by means of common feeding-troughs; proved that the flesh, milk, and juices of diseased animals were alike infectious; demonstrated that the infecting organism of the disease could withstand heat sufficient to moderately cook the flesh in which it was contained; explained certain peculiarities which Tuberculosis presented in different species of animals; and claimed to have succeeded in separating and cultivating the specific microbe of the disease.

Unfortunately, at this period M. Toussaint's health gave way, and the question rested where he left it till March, 1882, when Dr. Koch published his demonstration of the fact that Tubercular Phthisis in man was the work of a microbe which he had succeeded in cultivating according to a new method devised by himself. Since then the question whether consumption in man is or is not a disease spread by infection has become one of urgent practical importance. Numerous experiments with a view to its solution have been made, with more or less contradictory results. Experience has taught us that other classes of parasites capable of existing on several genera of animals are often themselves developed into different though closely allied varieties which normally infest only one or two species of animal, and which only manifest their full vigour and vitality when settled on a particular description of host which they normally affect. Toussaint had proved the extreme facility with which bovine Tuberculosis could be propagated among bovine animals, and the latest contribution to our knowledge on the subject is that by MM. Dieulafoy and Krishaber on the disease as it occurs in the animal most closely allied to man—namely, the monkey. Monkeys are very prone to tubercular disease—so much so that death by consumption is the most common end of those exhibited in our menageries. There was, therefore, no difficulty in procuring the exact tubercle-microbe natural to the species, and with it fourteen monkeys were inoculated, care being taken beforehand that the animals selected were in perfect health. In the same cage with them were placed twenty-four other healthy monkeys. Within seven months after the operation twelve of the fourteen inoculated had died of tubercular disease. Of the twenty-four healthy animals placed alongside them five died, giving a mortality of eighty-six per cent. in the one case and twenty-one per cent. in the other. After this the cage was cleansed and disinfected, and twenty-seven monkeys had, at the date of the report, inhabited it for fifteen months without the appearance of a single case of the disease. (Applause.)

Latest Discoveries about Hydrophobia.

Hydrophobia is one of the most terrible diseases to which mankind is liable, and until within the last few months it has been one of the most mysterious. Of a dozen persons bitten by a rabid dog or cat or wolf, not more than one or two might fall victims to it. Months, or even years, might elapse before it made its appearance, and the symptoms varied so much that some authorities refused to admit that it was anything more than the extreme result of a terrified and excited imagination. It was universally believed to depend upon a poisonous condition of the saliva, but additional obscurity was cast upon its nature by the fact that the saliva of human beings labouring under it repeatedly failed on inoculation to reproduce the disease in dogs. It was generally classified along with tetanus as a nervous disease, and considered to be uniformly fatal. In 1878 and 1879 M. Paul Bert, a well-known French *savant*, who subsequently occupied the post of Minister of Education in Gambetta's Government, made an investigation regarding the nature of Hydrophobia which cast some light upon the subject, but for some reason or other attracted but little attention. He transferred by transfusion the entire blood of a dog in a state of furious Rabies into a healthy animal, and *vice versâ*, and found that the healthy animal, kept under observation for a year, manifested no symptoms of the disease. As to the rabid animal, its life was apparently prolonged a couple of days by the operation. Having thus satisfied himself that the disease was not in the blood, Bert next endeavoured to ascertain in which constituent of the fluids that bathe the mouth in the disease the virus had its seat. Straining those fluids through a plaster filter, he found that the liquid which passed through was innocuous. The solids which remained

behind communicated the disease. He inoculated animals with pure saliva taken from the different salivary glands, but found that it never produced Hydrophobia. On the other hand, mucus taken from the bronchial tubes readily gave rise to it. It was therefore the mixture of this bronchial mucus in the saliva that constituted the medium of infection, and hence the explanation of the unequal action of the bites of rabid dogs. Bert also found that in a number of cases inoculation produced, not Hydrophobia, but extensive and fatal suppurations. At this stage, a couple of years later, M. Pasteur took up the problem. Suspecting the disease to be of microbic origin, he endeavoured to cultivate the microbe from the saliva of a child that had died of Hydrophobia. He succeeded in multiplying a microbe, but on inoculating it on rabbits, found that it gave rise to an entirely different and hitherto unknown disease. Further investigation showed that this was caused by a microbe, previously unsuspected, that exists even in healthy saliva. Pursuing his researches, Pasteur at first found himself baffled by the uncertainty of the disease and its irregular period of incubation; but suspecting that the habitat of the microbe, which he believed to be its cause, was the nervous centres, he hit upon the expedient of inoculating the virus directly on the brain surface by the aid of the trephine. In the saliva the microbe of Hydrophobia is mixed up with other organisms, so that on inoculation death may result in three different ways—from extensive suppuration, from the specific action of the salivary microbe whose existence Pasteur had disclosed, and from Hydrophobia. But Pasteur discovered that the microbe of Hydrophobia might always be found in a state of purity in the rachidian bulb of animals affected with the disease. Taken from this source and inoculated upon the brain surface of healthy animals, it multiplied itself rapidly, producing the characteristic symptoms of the malady in from six to ten days. Injected into the blood it frequently gave rise to symptoms entirely different from those recognised in connection with Hydrophobia, consisting of paralyses and intense itchings. It was proved that furious Hydrophobia and dumb Rabies constitute but one disease, the delirious hydrophobic symptoms occurring when the microbe multiplies itself in the brain, and the purely nervous form when it attacks the spinal cord; that the two forms of the disease are interchangeable, being capable of being produced one from the virus of the other, and that the dumb or spinal form of the disease may give rise to symptoms which render it extremely probable that it often escapes identification. In the course of his experiments, Pasteur came across one dog, which, on inoculation, took the disease and recovered from it, and which remained proof against all subsequent inoculations with it. Three dogs, besides this one, he found to be proof against Hydrophobia, and he suggestively inquires whether these may not, before being submitted to his experiments, have undergone the disease in the ordinary way and recovered. Finally, Pasteur found that the microbe of Hydrophobia possesses a strong vitality, and that the brain of a cow which had died of the disease, kept for three weeks after the death of the animal at a temperature of fifty-three degrees, on inoculation repeatedly produced Hydrophobia. (Applause.) Pasteur's efforts are at present devoted towards discovering a mode of attenuating the virus, in the hope that by its means he may be able to render dogs proof against the disease, and thus narrow to the utmost the channels through which Hydrophobia may find its way to man. (Applause.)

Conclusion.

Gentlemen, I have, I fear, detained you too long. In conclusion, I have only to say that you are about to enter upon a profession in which it will depend very much on yourselves individually what status you shall enjoy. It is a profession in which you may rise very high or sink very low. The

day is past when a man required only to be able to fire a horse, bleed a cow, and use a drenching-horn to dub himself a veterinary surgeon. But if you content yourself with a servile adhesion to routine—with pouring drugs of which you know little into elaborately-organised beings of which you know less—you will advance yourselves but a small degree beyond the unenviable status of the horse-doctor of bygone days. But you have brilliant examples before you; you have men of education and intelligence to teach you, and you are entering your profession at a time when, in a degree far in excess of any former period, responsibility and power and emoluments are offered by the country to the accomplished veterinary surgeon. If, availing yourselves of your opportunities, you devote yourselves heart and soul to the career before you, not regarding it as a mere sordid means of money-grubbing, but as a mind-expanding and all-important branch of the noble art of the physician, I have no hesitation in saying that in your study and labour you will derive a pleasure, and in your knowledge a sense of intellectual superiority over the unthinking mass around you, which of themselves will constitute no mean reward, which will amply repay you for any lack of that superfluous wealth which so many men set up as their earthly idol, which will entitle you to mix on equal terms with the foremost intellects of your generation, and which will leave you no reason to regret the chance that has directed you to the study of veterinary medicine. (Loud and prolonged applause.)

Sheriff CLARK said: I have been requested to move a vote of thanks to Dr. Cameron, to whom we are so much indebted for his lecture to-day. It has been my privilege, through the kindness of your principal, to be present at almost all the lectures of an introductory kind that have been made in this institution for many years, and I must say that while during that time I have heard many admirable lectures, I do not remember ever having listened to one that was more intelligent—even to a layman such as I am—that was more suggestive and more instructive—that more deserved to receive the highest attention from all present. (Applause.) The learned lecturer has well brought out those facts which show us that veterinary science, that veterinary medicine and human medicine, are only the same things viewed from different points of view, and how impossible it is that either the one or the other can worthily fulfil its purposes and fill its sphere of action if the one is separated from the other. (Applause.) How admirably has he brought out and put into small compass what is now known as regards the germ theory of disease! How clearly has he explained it so that even I, though an unscientific man, can fully appreciate the immense advantages that will follow when the theory of vaccination is wrought out to its full extent. (Applause.) In the remarks with which he closed his lecture he showed great knowledge of mankind, and if you, the younger members present, will only lay your hearts to them, I have no doubt that you will rejoice in some future time that you were present at this lecture. (Applause.) I am sure I need say no more, but that you will accord a very cordial and enthusiastic vote of thanks to Dr. Cameron, who, as member for this city, has done everything in his power to further every good work among us. (Loud cheers.)

Dr. CAMERON: Gentlemen, I must say you have received my lecture with an attention which was the best vote of thanks that I could have desired. The heartiness with which you endorsed the very kind and flattering words which Sheriff Clark has said regarding me is superfluous, and far exceeds anything to which I have any claim. But I was once a student myself, and I know that very few students knock themselves up with too hard work. (Laughter and applause.) I don't expect that you should do so, but I think

that a little work and a little hard application never yet did a student any harm. (Applause.) As Sheriff Clark has said, I have taken a great interest in veterinary medicine and in the veterinary profession. I have the privilege almost every year of meeting the most distinguished members of that profession in London, and I can tell you this, that the number of Scotchmen among them and of men who have been educated in Scotland is something extraordinary. (Applause.) So remarkable is it that at a great veterinary dinner a hint was given me on no account to allude to the fact, because it would be certain to excite a good deal of ill-feeling and envy among the native Englishmen. (Laughter and applause.) Nothing can be more certain than this, that in no veterinary school in Scotland have you a better opportunity of learning your profession than in this school in Glasgow. I did not like to inquire whether an abnormally large proportion of the Scotch veterinary professors in England were Glasgow men, but I hope that in the future there will be as good cause for remark among the Scotchmen who succeed south of the Tweed as to the inordinate number of Glasgow men of eminence among their number, as there is now as regards the abnormally large number of successful Scottish veterinary surgeons. (Loud applause.)

Dr. KNOX then presented the prizes gained by students during the summer session, and afterwards said: Before I sit down, I have one other duty to perform which is not so pleasant. I must say good-bye to the Veterinary College. It is rather a serious matter after having spent about ten years—if I remember aright—as lecturer on physiology in this College to make such a complete break; but my other professional duties will no longer allow me to continue teacher on physiology here. I can look back with very great pleasure indeed to the days which I have spent in this classroom; and I think that those gentlemen who did me the kindness to listen to my lectures will bear witness with me that we did sometimes good work. (Loud applause.) I have always felt that the veterinary profession should have a very high ideal before it, and I quite sympathise with and homologate the statements which have been made by Dr. Cameron to-day. I think the veterinary surgeon should be even a more scientific man than his medical brother. (Applause.) We medical men have great assistance in the diagnosis of disease in our patients from the fact that our patients can speak to us. They can tell us where pain resides; they can tell us a great deal about the state of the internal organs. But your patients are dumb. You have to find out what is wrong with them entirely by your own scientific knowledge. By your knowledge of animal physiology only will you be able to tell what is wrong, what is diseased, what is pathological. (Applause.) Dr. Knox then introduced to the students his successor, Dr. Wm. Limont, lecturer on physiology in the Western Medical School, a gentleman thoroughly well fitted to discharge the duties of lecturer in the Veterinary College, and concluded by expressing the hope that they would follow Dr. Limont's instructions, and keep constantly before their minds the same high ideal of their profession which it had ever been his endeavour to hold before them. (Loud applause.)

On the motion of Rev. D. WATSON, the students warmly accorded to Dr. Knox an expression of their gratitude for his services in the past and of their wish for his future prosperity.

Dr. CAMERON then said: I have to move a vote of thanks to the learned principal for having so worthily occupied the chair on this occasion. (Applause.) To those of you who have been here during the former sessions it would be impertinence on my part to utter any commendations of his many good qualities. As for those who are now joining the College for the first time, I have no doubt they have already heard his praises in many quarters, and that before the session passes over their heads they will have ample reason to esteem him at his full worth. (Loud applause.)

Principal McCALL: I had no intention that I should be asked to do more than simply introduce the lecturer upon this occasion. I have always endeavoured if possible to secure the presence of some gentleman more or less not only connected with the medical profession, but also with our own, to deliver the introductory address. I am sure those of you who have been in the habit of attending must have been gratified upon all these occasions, and, as has been said, upon no occasion have we derived greater benefit than upon the present occasion. (Applause.) There is only one element that makes me a little sad upon this occasion, and that is parting with my friend Dr. Knox. The doctor, as he says, has been for many years associated with us in conducting a very important department of our studies—physiology—and I know every one of you feel deeply indebted to him for the service he has rendered to you in the past. (Applause.) He has been a help to all of us, and I must say that personally he has been instrumental in drawing the medical gentlemen of this city closely round the Veterinary College. (Applause.) We part as good friends as we ever were. There is no discord. Nothing of that kind has been the cause of Dr. Knox resigning his position here. It is simply that his own professional duties are so very numerous that he feels he cannot do justice to them and do that justice to the students of the College which he would like. So much satisfied was I with what he had done for us, that I asked him to name his own successor, and he has done so by naming Dr. Limont. (Applause.) Before sitting down, Principal McCall moved a vote of thanks to Sheriff Clark, who not only came upon occasions such as the present, but who looked in very frequently at odd times, and always with a kindly word of encouragement. (Loud applause.)

The learned Sheriff having acknowledged the compliment, the proceedings terminated.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

(*Continued from page* 467, *vol. xvii.*)

Colonel KINGSCOTE, M.P., in seconding the proposition, observed that he would confine his remarks within a small compass, because he had expressed his views before, not only in that room but elsewhere. It was really a grievous thing to think that Foot-and-mouth Disease was continuing to spread throughout the country, and that throughout the autumn it had prevailed so extensively. Perhaps they might be told that the disease had not been imported from abroad since 1880; but there had been a certain number of affected cargoes arrive, and there was a probability that the disease might have been carried from them about the country. He had seen it stated that an outbreak near Weymouth was caused in this way:—Some foreign cattle came from Portland, and were slaughtered at Weymouth. The manure and the blood from that slaughterhouse were taken on contract by a farmer some few miles away, the blood was spread over his land, and his animals broke out with Foot-and-mouth Disease. He believed this story to be perfectly correct, and, if so, it showed that the virus of Foot-and-mouth Disease was brought from abroad into this country. What agriculturists wanted was that the recommendations of the Royal Agricultural Commissioners should be given effect to; and he, for one, regretted that the Government had not taken steps to carry out those recommendations. As regards the uniform action of local authorities, he thought that also was a necessity. Although England first gave the disease to Ireland, the great source of mischief at the present moment was the animals coming from that country. He maintained that the only way of stopping the mischief was to adopt the hard-and-fast rule, that where disease broke out, the area round it should be very tightly drawn. The present regulation of half a mile was next to useless. The moment

disease broke out, let there be declared an infected area for two miles round it. Mr. Randell had alluded to the fact that that in some parts of the country the farmers were almost in open rebellion, and one could hardly wonder at it. But he would ask them to have a little patience. The chief constable of Cumberland and Westmoreland presented a report lately, showing what these counties had saved by the restrictions put upon them. In his own county (Gloucestershire) they had been free all the autumn, though they had a very difficult place to contend with, viz., the Bristol market; but the Gloucestershire local authority prohibited any animals coming into the county from that market without first undergoing quarantine. Although the farmers were suffering very much—he himself was suffering—in consequence of being unable to buy young stock, yet they were all thankful to the local authority for having placed restrictions on the movement of cattle, and so prevented the disease coming into the county.

Mr. WAKEFIELD said that being identified with what he might call the Cumberland and Westmoreland system, he might be allowed to say a few words. It might be taken for granted that a great deal of disease was coming from Ireland, and that the disease was introduced into it from England, but if there had been uniformity of restrictions, the disease might have been speedily stamped out. It seemed that during the present year forty-three cargoes of diseased animals had arrived at English ports, and therefore there was grave suspicion that disease might have been re-imported into this country from these importations. But he certainly thought that a great deal might be done by uniformity of regulations. The advantage in Cumberland and Westmoreland had been very considerable, but while subjecting themselves to grave restrictions, and succeeding in keeping clear of the disease, they felt it to be a hardship that other localities should be so careless in the matter, and thus the inconvenience was kept up. If they applied common sense to outbreaks throughout the country the disease might be got into a very small compass, and the distressing inconvenience might be avoided. The Privy Council had given full powers to the local authorities, and the need was that these powers should be exercised. If the local authorities refused to exercise them, the Privy Council should step in.

Mr. LITTLE said it was admitted on all hands that for the future prosperity of agriculture in this country, breeding of stock of all kinds was of paramount importance. That being so, he should like to ask how, under present circumstances, it was possible to increase breeding stock. This year he had been able to breed something like fifty head of cattle; some fifteen head of these had succumbed to the disease. Next year, in consequence of cows slipping their calves, and other losses due to the disease, he should reduce the number to thirty; and the following year probably to twenty. He believed that Professor Brown, and most gentlemen connected with veterinary science, would tell them that it was possible to stamp out Foot-and-mouth Disease. He asked, If it could be done in this country, why could not it be done in those countries from which we obtain this disease? Let them show that the disease was stamped out, and England would be willing to take their stock. Great surprise was expressed from time to time that certain counties did not submit to restrictions; but it must be remembered that farmers in those counties had to pay their rent, and that could not be done if they were unable to stock their land, and sell them when fit for market. Notwithstanding the Society's previous failures by deputations to the Government, he hoped they would be influenced by the resolution of to-day.

Lord EGERTON remarked that the Government say that under the present Act they were unable to prevent the introduction of live animals from abroad, except as a temporary measure, but he ventured to think that this was not a

sound argument, for they have shown that it can be done in reference to France. He thought that the Government would be perfectly justified in doing to other countries what they had done to France, and, if necessary, call for an indemnity at the beginning of next session. He believed that the tone of despair, and the chafing at internal restrictions, was because the farmers felt that unless the disease was kept out, these restrictions were useless. At the same time, he believed this feeling did not exist in all counties —not in Cheshire, for instance, where the restrictions had been loyally carried out.

Mr. DENT knew he represented a minority of one on this question, but he would be wanting in moral courage if he heard all the remarks which had been made without entering a protest. He looked upon the statements as to losses by Foot-and-mouth Disease, and the figures put before them, as to a very great extent exaggerated. He could speak decidedly as to a large portion of the West Riding that to be prevented by restrictions from getting cattle at this moment would be far more serious to farmers than the importation of Foot-and-mouth Disease. He was sorry to say that Foot-and-mouth Disease was spreading at this moment in the West Riding, and was likely to spread for the next few weeks ; but he thought that the feeling of alarm about the disease was not so widespread as the Council and some other bodies seemed to think. He knew farmers who bought cattle from the York market, but, although affected with the disease, he believed there was scarcely a case in which they were treated by a veterinary surgeon or anybody else. He did not believe that the ordinary grazier had the dread of Foot-and-mouth Disease which seemed to be felt by others. It was not within his experience that farmers gave up breeding on account of disease, the reason being that it was found more profitable to buy grazing stock from Ireland. He thought they should be very careful about urging the Government to impose uniform restrictions, which would be strongly objected to in grazing districts.

Mr. ASHWORTH considered that Mr. Dent's speech would be most dangerous, and be quoted by many people on the opposite side, and be made more use of than even Mr. Dent intended. In the district in which he (Mr. Ashworth) lived—in Cheshire—a petition was got up and signed by nearly two thousand farmers, in three days, to pray the Government to impose the restrictions desired by Mr. Randell's motion. It was now quite time to apply another lever to the Government.

Lord FEVERSHAM thought it very necessary that the representation proposed should be made to the Government. Could not the Government institute a more efficient system of inspection at markets? He understood that very often the inspection was very inadequate.

Professor BROWN said that before the resolution was put there were one or two points upon which the Council should be informed. Of course it must not be forgotten that anything coming from the Royal Agricultural Society attracted very considerable attention on the part of the Government, and it was very unfortunate when anything was asked which could not be granted, or if anything was asked for under a misapprehension. If the Council went with this proposition to the Government they would be asked what they meant by the term "contagious"—whether they meant Foot-and-mouth Disease, or used the term as it was employed in the Act. If the latter, they were asking that all live animals from exporting countries should be stopped, because there was no exporting country that was free from disease. Consequently they were asking the Government to supersede the present Act. This the Privy Council had no power to do. All the Privy Council had done was to prohibit, in the case of France, and previously in the case of one of the Spanish or Portuguese ports, to prohibit temporarily the landing of animals on account of Foot-and-mouth Disease. That was fully within their powers.

But when they asked for the prohibition of the importation of all animals from countries as to which they were not satisfied, and when it was known that there is no country as to which the Privy Council was satisfied, there was positively no country which would come under the exception, and therefore they were asking the Government to legislate, and not to carry out the law. His conviction was, that if British farmers wanted to protect themselves from the introduction of foreign diseases as completely as possible (nothing could give absolute protection, for infected material might be conveyed in a variety of ways), there was no alternative between the present system and the absolute prohibition of the importation of all live animals. Intermittent and occasional prohibition was pure delusion as to giving protection. As to uniformity of regulations, the Privy Council were utterly powerless to effect this. Moreover, the feeling of the country would be absolutely opposed to the Privy Council taking the initiative and imposing sufficient restrictions. Memorials were being constantly sent in to the effect that the restrictions are extremely embarrassing, and that they ought to be at once revoked. He was quite aware that many owners of store stock regarded the disease as a trifling matter, but he was also aware that to owners of breeding stock and fat stock it was a terrific calamity. Foot-and-mouth Disease was quite as contagious —quite as easily spread--as Cattle Plague, and if they said that it was more economical to stamp out Cattle Plague by slaughter, that was the remedy for any disease they wished to get rid of. The restrictions already made had not been in the direction of stamping-out; they had been merely restrictive, intended to moderate the extent of the disease, and they had produced that effect. In conclusion, Professor BROWN stated that the Privy Council could not insist upon inspection of markets. The local authorities were empowered to appoint inspectors for such purposes.

The proposition was then put to the vote, and carried unanimously, and the President was asked to forward it to the Lord President of the Council.

The report of the Committee was adopted.

THE SCOTTISH METROPOLITAN VETERINARY MEDICAL ASSOCIATION.

A QUARTERLY meeting of the above was held in the London Hotel, Edinburgh, on November 21st, the President, C. Phillips, Esq., A.V.D., 3rd Dragoon Guards, in the chair.

Present: Professors Walley, Williams, Baird, and Lewis; Messrs. Phillips, Cameron (Berwick-on-Tweed), Cunningham (Slateford), Baird, A.V.D., 2nd Dragoons (Edinburgh), Boyd (Melrose), W. O. Williams, Dalling (Bathgate), Gray (Edinburgh), a few students, the representatives of the press, and the Secretary.

The following gentlemen were nominated for membership :—Mr. Finlay Dun, M.R.C.V.S., by Mr. R. Rutherford; Mr. Burnet, M.R.C.V.S. (Maybole), by Mr. W. O. Williams; Mr. Hume, M.R.C.V.S. (Haddington), by Mr. Lewis.

The rules for the constitution and regulation of the society, as at present in force, were read and compared with a revised set, which the SECRETARY gave notice he would bring forward for adoption at the next meeting.

The election of office-bearers for 1884 was then proceeded with, the following gentlemen, after being duly proposed and seconded, being elected: President—Professor Walley, Royal Veterinary College, Edinburgh; Vice-Presidents—Messrs. Boyd (Melrose), Cameron (Berwick-on-Tweed), Connochie (Ayton); Secretary and Treasurer—Professor Lewis, New Veterinary College.

Professor LEWIS then read a long, very interesting, and exhaustive paper

on "Bacteria," which it was determined by the society should be forwarded to the professional journals for publication, and for which he received a hearty vote of thanks.

The following is Professor Lewis's paper :—

Bacteria.

Probably there is no other subject which is exciting such deep interest in scientific circles at the present time as that of bacteria. This is owing in a great measure to the rapid advances which have recently been made in the elucidation of the part played by these small organisms in the economy of the world, and to the startling discoveries of the exceedingly important phenomena resulting from their activity.

Bacteria have a wider distribution than any other class of animate bodies. They are present around us on every side : in the soil, in nearly all waters, in the air we breathe, in our food, on the surfaces of our bodies, and even within us. In health they occur in considerable numbers in the alimentary and respiratory organs of man and animal. In disease they invade the blood and various tissues of the body. They are present in all decomposing animal and vegetable matters, and in most substances undergoing fermentation. Their relation to putrefaction and fermentation is of an important nature, those changes being dependent upon the action of bacteria or allied organisms.

Putrefaction is the change which occurs when dead organic matter breaks up and its constituent elements unite to form new and simpler compounds. Shortly after the death of an animal its tissues commence to putrefy—that is to say, the complex organic compounds are resolved into simpler substances, as ammonia, water, carbonic acid, sulphuretted hydrogen, etc. At the end of the process the animal matter has disappeared, and in its stead we have a number of substances in a condition fit to be utilised as food by members of the vegetable kingdom. This putrefaction is caused by bacteria. If it were not for them the dead bodies of animals and plants would, under ordinary circumstances, remain in an unchanged condition for years.

That putrefaction is brought about by bacteria can be proved experimentally. Exclude the organisms, and putrefaction will not occur. The preservation of meat, fish, etc., by "tinning" is an example of this. Up to a recent date this method of preserving substances was carried out with the idea that putrefaction is caused by the oxygen of the air, and that if it were excluded the substance would remain free from decomposition. The falseness of this conclusion can be demonstrated by exposing organic matter to the action of air which has first been filtered through cotton wool in order to free it from bacteria. If the air has been properly filtered decomposition will not set in, no matter how long the exposure last.

Putrefaction is but one example of the numerous changes due to the action of bacteria. They are the exciting cause of several of the fermentations—as butyric fermentation, the change which occurs when butter turns rancid ; the acetous fermentation, as in the preparation of vinegar ; and the lactic acid fermentation, as in the souring of milk ; while the pathogenous or disease-producing bacteria play a still more important part in the causation of most of the principal infective diseases, as Anthrax, Swine Fever, Tuberculosis, Relapsing Fever, Fowl Cholera, etc.

Place in Nature.—Bacteria belong to the vegetable kingdom. They are the lowest and simplest of all plants, appearing to stand at the very threshold of the vegetable kingdom. Indeed, they possess so few of the characters of the higher plants, that for years after their discovery by Leuwenhoek in 1675, much uncertainty existed as to their true nature. At first they were generally regarded as belonging to the animal kingdom,

on account of their possessing the power of locomotion. By some they were even placed in the inorganic kingdom, being looked upon as mere crystalline matter. But at the present time no doubt exists in the minds of those who have specially investigated the subject as to the vegetable nature of bacteria.

The term *bacterium*, signifying rod-like, is not altogether a suitable one for these organisms, as some of them never take on the rod-shape at all. In order to avoid this incongruity, the term schizomycetes (cleft fungi) is now often used instead. Bacteria are defined to be cells deprived of chlorophyll, of globular, oblong, or cylindrical shape, sometimes sinuous and twisted, reproducing themselves by transverse fission and by the endogenous formation of spores, living isolated or in cellular families.

STRUCTURE.—A bacterium is a single-celled plant. It consists of a cell wall and cell contents, many of them being provided also with fine hair-like filaments at their extremities. These filaments are known as cilia or flagella. The cell wall is not under ordinary circumstances rendered visible by the microscope, but its presence may be proved by means of chemical reagents. It is believed to consist principally of cellulose. Potash and ammonia do not destroy it, and it shows great resistance to the action of acids and putrefaction. In some bacteria the cell wall is rigid, while in others it is very flexible.

The cell contents differ from the cell wall in being nitrogenous. They consist principally of protoplasm, which has a homogeneous structure in the smallest bacteria, while in the larger varieties it often encloses vacuoles and granules. Many of these granules are particles of pure sulphur, and may be dissolved out with carbon disulphide. The protoplasm is usually colourless, but in the coloured bacteria it may be blue, yellow, or red, owing to the presence of pigment granules. Unlike the protoplasm of the higher plants, it never contains chlorophyll. The coloured bacteria have been divided into two groups: (1) Those which manufacture their own colouring matter, and (2) Those which borrow their pigment from adjacent substances. The coloured bacteria are much less numerous than the uncoloured ones, but occasionally they occur in immense quantities. Warming states that in Norway, red bacteria appear in summer in such masses that the borders of the sea are sometimes coloured of an intense red.

Cilia are exceedingly fine hair-like processes found at the extremities of most of the true bacteria. There may be one, two, or three at each extremity, but usually not more than one. Owing to their extreme tenuity it is a very difficult matter to see the cilia, even with the highest powers of the microscope.

Form.—Bacteria are met with in different shapes. Even the same organism may vary its shape during different periods of its existence. It may be round, oval, rod-like, or filiform. The filiform bacteria may be straight, waved, or spiral. The straight ones may be equally cylindrical, or they may present an enlargement at one end, at each end, or in the middle.

Size.—Bacteria vary greatly in their dimensions. The smallest are only just visible under the highest powers. They measure about the $\frac{1}{3\,0\,0\,0\,0}$ of an inch: while the spirilla—the largest—measure about the $\frac{1}{1\,0\,0}$ of an inch in length. Bacterium termo has a length of from $\frac{1}{1\,2\,0\,0\,0}$ to $\frac{1}{8\,0\,0\,0}$ of an inch; bacillus anthracis a length of about $\frac{1}{3\,3\,0\,0}$ of an inch.

Movement.—Bacteria are divided into motile and non-motile. Most of them possess the power of movement during some period of their existence. Many enter into stages of rest, during which they appear to be incapable of movement. Bacillus anthracis is non-motile under ordinary circumstances, a feature which assists one in distinguishing it from other like organisms, but, according to Cossar Ewart, under certain conditions it becomes actively

motile. The movements manifested by bacteria are of two kinds—motion and locomotion. The first consists in a movement of the fungus on itself, in which it appears to revolve round the axis of its own body. This is the only kind of movement shown by the micrococci. The second or locomotive movement is one of translation. It results in the passing of the organism from place to place.

The movements of bacteria are generally stated to be due to the vibrations of their cilia. Some authorities deny this, and affirm that the motor power lies in the body of the bacterium. Warming states that one meets with some examples in which the body remains motionless while the cilia are in violent agitation, and others in which the body moves while the cilia remain inert or dragging behind.

When bacteria occur in numbers in fluids or tissues they arrange themselves in various ways in regard to each other. They may be free and quite independent, or attached end to end forming chains, or grouped together in irregular masses, with or without an intermediary mucous substance. When the chains are formed by the union of globular bacteria they receive the name of *torulæ*. The term *leptothrix* is applied to a chain consisting of rod-like bacteria. Masses of bacteria held together by an intermediary jelly-like substance receive the name *zooglea*. Opinion differs as to the origin of the mucous matter of zooglea, some believing it to be formed by jellification of the cell wall, others holding that it is a secretion from the cell protoplasm. The term *mycoderma* is applied to masses of immobile bacteria, devoid of intermediary mucous matter, when occurring as films floating on the surface of liquids.

NUTRITION.—The conditions necessary for the development and propagation of bacteria are a proper supply of food and moisture, and a favourable temperature. Their food is partly organic, as animal and vegetable substances, and partly inorganic, as compounds of sulphur, phosphorus, and potassium. Unlike the chlorophyll-containing plants, bacteria cannot take their carbon from carbonic acid. They obtain it from some of the more complex carbonaceous bodies, as some of the organic acids, sugar, glycerine, etc. Their supply of nitrogen is obtained principally from animal or vegetable tissues, but may be taken from such compounds as urea, ammonia, and the nitrates.

Some bacteria take the oxygen they require directly from the air; these are called by Pasteur *aërobic* bacteria. Others do not require a direct supply of oxygen, and are even destroyed if exposed to free oxygen for any length of time. These are called *anaërobic*. They take what oxygen they require from decomposing matters.

It is essential for the development of bacteria that their food be presented to them along with a certain amount of water. They cannot thrive upon desiccated food.

The temperature most favourable to the development of the greater number of bacteria is 95° F. Bacteria differ very much in their susceptibility to the action of high temperatures. Putrefactive bacteria are destroyed by a temperature of 122° F. On the other hand, some of the bacilli withstand a temperature of 176° F. Spores are much less susceptible to the action of heat than the bacteria themselves. Exposure for a short time to a temperature of 212° F. does not injure them. Very low temperatures impair the activity of bacteria, but do not destroy them. According to Cohn they resist an exposure of several hours to a temperature of 0° F. And Frish states that they are not killed by a temperature of – 123° F.

MULTIPLICATION.—Bacteria multiply in two ways—by division, and endogenously by the formation of spores. In propagation by division the bacterium lengthens out to about twice its original length, and then divides

into two. Each of these elongates and divides in a similar manner. This is the way in which bacteria usually multiply in the blood of living animals.

When multiplying endogenously the bacterium lengthens out into a filament, which in the course of twenty-four hours may be twenty times as long as the original bacterium. Some hours later the clear protoplasm becomes granular, and then small spots appear, which develop into refractile spores. Afterwards the walls of the filament give way, and the spores becomes liberated. The spores germinate and develop into bacteria, like the parent fungus, if placed in favourable conditions.

Some bacteria form enlargements or sacs, termed *sporangiæ*, containing from three to six spores. Toussaint has observed them on the filaments of the Anthrax bacterium in the dog. Some bacteria multiply very rapidly, as B. termo; others increase but slowly, as B. tuberculosis. With most bacteria multiplication ceases at 32° F.

ACTION OF FOREIGN SUBSTANCES ON BACTERIA.—Certain substances, as corrosive sublimate, iodine, bromine, and chlorine, act upon bacteria in an injurious manner, arresting their development or destroying them outright. Corrosive sublimate is particularly destructive to them. A solution containing one part in 20,000 parts of water is said to prove destructive to the spores of bacilli in a few minutes. One part in 5,000 parts of water is a very powerful germicide. Experiments with sulphurous acid appear to prove that it is not a very potent disinfectant. In one experiment the spores of B. anthracis were not destroyed by a ninety-six hours' exposure to air containing six per cent. of sulphurous acid. Carbolic acid is a much more effective germicide, though some few fungi appear to be insusceptible to its poisonous effect. A one-per-cent. solution generally destroys bacilli in a few minutes. Their spores show a greater resistance to its action; but a five-per-cent. solution kills them after several hours' exposure. At ordinary temperatures the vapour of carbolic acid has but little effect upon bacteria. Chloride of zinc in five-per-cent. solution does not destroy the spores of B. anthracis. Iodine and chlorine are very much more powerful as disinfectants than sulphurous acid. Alcohol has no effect upon the spores of bacilli. They will germinate after lying in absolute alcohol for several months.

CLASSIFICATION.—No satisfactory natural classification of the bacteria has been formulated as yet. Cohn's system is the best. He has arranged them into four tribes according to their form:—I. *Sphæro-bacteria*, or round-celled bacteria. II. *Micro-bacteria*, cells small and rod-like. III. *Desmo-bacteria*, larger rod-like cells. IV. *Spiro-bacteria*, cells twisted or spiral.

THE SPHÆRO-BACTERIA are very small globular or oval cells, occurring isolated or attached, forming chains, or zooglea, or mycoderma. It is believed that they do not possess the power of locomotion. This tribe includes two genera—*Sarcina* and *Micrococcus*.

MICRO-BACTERIA are short, cylindrical, rod-like cells. They may be free, or attached in pairs or in chains, or forming zooglea. They are actively motile. But one genus—*Bacterium*.

DESMO-BACTERIA are rod-like cells, larger than those of micro-bacteria. They occur free or in chains, and are mostly motile, though some few appear to be non-motile. There are two genera—*Bacillus* and *Vibrio*. The genus bacillus contains many of the best-known disease-producing bacteria, as B. anthracis, B. tuberculosis, B. lepræ, etc.

SPIRO-BACTERIA are actively motile, curved or spiral cylindrical cells. Free or forming chains. This tribe includes two genera—*Spirochæta* and *Spirillum*.

Over thirty different species of micrococci have been described. Many of these are closely connected with the causation of certain diseases. The most important species are:—

Micrococcus vaccinæ, found in the lymph of the vesicles of Vaccinia. It is believed to be the contagium of the disease, as the lymph becomes inert when the micrococci are removed from it by filtration. The same or a similar organism is found in the pustules of Small-pox.

M. diphtheriticus, found in the false membranes of Diphtheria, and in the lymphatic glands and vessels. In advanced stages of the disease they are sometimes present in the blood-vessels in such quantities that they block up the capillaries, or even cause them to burst. Their true relation to the disease is uncertain, but they are considered to be its cause.

M. of erysipelas, found in great quantities in the lymphatics in Erysipelas. Koch, Orth, Ziegler, and others state that it is the cause of the disease. The disease can be transmitted to the rabbit by inoculation with the micrococcus.

M. septicus occurs in suppurating wounds, and in various parts of the system in Pyæmia and Septicæmia. Though M. Septicus or allied organisms are found in the blood in some forms of Septicæmia affecting the lower animals, they are not usually met with in the blood in the ordinary Septicæmia of man. In this disease the bacterium manufactures a soluble poisonous ferment, termed *sepsin*, which, when absorbed into the system, gives rise to Septicæmia.

M. bombycis, the cause of Pébrine, a very fatal disease affecting silkworms. They are found in the intestines, tissues, and eggs of the diseased insects.

Micrococcus suis, found in the blood and tissues of animals affected with Swine Fever. Experimental investigation seems to have proved that it is the cause of the disease. Some authorities place this organism in the genus bacillus, and term it B. suis.

Sarcina.—In this genus the globular cells divide crosswise, and the young cells arrange themselves in groups of four or multiples of four. These fungi occur in the stomach, lungs, and urine, but their presence is regarded as being unimportant.

Microbacteria.—Numerous species of the genus Bacterium have been described. Bacterium differs from Micrococcus in its form, which is rod-like, and in the possession of the power of locomotion. The most interesting species are :—

B. termo.—The active cause of ordinary putrefaction, and occurring in all putrefying organic matter. It is a short rod-like cell, about the $\frac{1}{12000}$ of an inch in length, and is furnished at each end with a cilium.

B. synxanthum.—Occasionally found in milk, especially in boiled milk, which has been allowed to stand for some time. It changes the colour of the milk, giving rise to what is known as "yellow milk."

B. syncyanum is also sometimes found in milk. It causes the so-called "blue milk." The "red milk," sometimes met with in this country, is probably caused by a similar fungus.

B. acruginosum.—Occasionally found on the surfaces of suppurating wounds, giving a green colour to the pus.

DESMO-BACTERIA.—The most important species of Bacillus are :—

B. anthracis.—Occurring in the blood and tissues of animals affected with Anthrax, and the undoubted cause of the disease. It is a rod-like organism, with a length of about the $\frac{1}{3000}$ of an inch. Is generally considered to be non-motile ; but, according to Ewart, when placed under favourable conditions it is freely motile. The spores of B. anthracis are exceedingly resistant to the action of ordinary destructive agents. Pasteur states that they retain their disease-exciting power after lying in the ground for ten years. When the bacillus is cultivated in chicken broth, for some time its virulence becomes modified. It still retains the power of causing Anthrax when introduced into

the system of a living animal, but the attack is usually of a mild nature. As one attack of Anthrax confers immunity from a second, inoculation with the cultivated bacillus is now used for the purpose of rendering animals insusceptible to attacks of the naturally occurring disease. Preventive inoculation has proved a failure, however, in the hands of some operators, and much controversy is going on at the present time as to its practical value.

With Pasteur the operation has been a decided success. In one experiment he inoculated twenty-five sheep out of a flock of fifty with the cultivated bacilli. A fortnight afterwards he inoculated the whole flock with the ordinary virulent Anthrax bacilli. The twenty-five unprotected sheep died of Splenic Fever within fifty hours; the twenty-five which had been protected by inoculation with the cultivated bacilli resisted the infection.

It is probable that the B. anthracis grows normally outside the bodies of animals, as it can be readily cultivated in many vegetable infusions, and on crushed oats, barley, maize, beans, and other vegetable matters, providing a sufficiency of water be present. This fact will account for the occurrence of many of the so-called spontaneous outbreaks of Anthrax.

The bacilli of Quarter-ill appear to differ somewhat from the ordinary B. anthracis. They are shorter and thicker. When collected together in masses they give rise to the evolution of quantities of gas, thus causing one of the characteristic symptoms of the disease.

B. subtilis found in hay tea and other infusions. Cohn states that it is the cause of the butyric fermentation. It differs from the B. anthracis in being motile under ordinary circumstances, and in possessing rounded ends furnished with cilia, while the B. anthracis has square ends and no cilia. Buchner holds that these two bacilli are very closely related to each other, and states that by careful cultivation in animal matter the B. subtilis may be transformed into the B. anthracis, and, conversely, the B. anthracis, by proper cultivation, into the B. subtilis.

B. tuberculosis.—Found in the tubercles and sputa of animals affected with Tuberculosis. These bacilli are slender, motionless cells, isolated or united, forming short chains. Sometimes they enclose large central spores, which, being broader than the cells, cause the bacilli to have a fusiform shape. The bacilli of Tuberculosis grow very slowly, and it is believed that they do not develop naturally outside the body. To Dr. Koch belongs the merit of discovering these bacilli, and of proving them to be the cause of the disease both in man and animals.

B. leprœ occurs in various tissues of the body in persons suffering from Leprosy. These bacilli are very slender, and can be seen with great difficulty unless stained. They resemble the B. tuberculosis. The investigations of Hanson and Neisser prove that they are the cause of Leprosy.

B. œdematis, described by Koch as being found sometimes in putrefying matters, and producing in animals malignant œdema, a disease somewhat resembling Anthrax.

B. malariæ found in the air and soil of marshy districts, and in the blood and spleens of patients who have died from malarious Fever. Said to be the cause of malarious Fever.

B. choreæ ovis, discovered by Professor Williams in the spinal fluid of animals affected with Louping-ill, and in the bodies of ticks obtained from Louping-ill districts. He believes it to be the exciting cause of the disease.

B. of Cholera.—During the present year Koch, while investigating the pathology of Cholera in Egypt, discovered numbers of bacilli in the mucous membrane of the intestines of patients dead from that disease. The bacillus resembles one which is found in animals affected with Anthrax.

SPIRO-BACTERIA.—The genus spirochæta contains one species of pathological interest, the *S. Obermergeri.* This fungus, often spoken of as

"spirillum," is found in the blood of patients suffering from Relapsing Fever. It is the cause of the disease, as proved by inoculation experiments on monkeys.

In addition to the diseases already referred to, bacteria are found associated with many other morbid conditions, as Typhoid Fever, Measles, Scarlatina, Yellow Fever, Foot-and-mouth Disease, Pleuro-pneumonia, Glanders, acute yellow Atrophy of the Liver, some forms of Endocarditis, Foot Rot in sheep, Croupous Pneumonia, Syphilis, etc. But in most of these diseases the exact significance of the presence of the bacteria has not yet been determined. The mere presence of bacteria in the bodies of animals affected with certain diseases is not sufficient to justify their being looked upon as the cause of those complaints.

Professor WALLEY next showed an improved tooth-rasp, the improvement consisting of an india-rubber band fitted with a groove on the sides and point of the rasp, which prevents injury to the mouth when the instrument is being used. He also exhibited the testicle of a boar, enormously increased in bulk, the major portion of the enlarged mass being tuberculous; and in doing so, he took occasion to point out, how easy in such a case it was for the disease to be propagated. Also the testicle of a pony (destroyed for dissection) affected with Lymphadenoma, the weight of which was 18½ lbs.

For both exhibits the professor was thanked.

Some discussion then took place as to the annual meeting, which it was hoped would be largely representative of the three Scottish Veterinary Medical Associations, and of the form it should take on this occasion. Finally, Messrs. Rutherford and Lewis were authorised to form a small committee to make all the arrangements; and after a vote of thanks to the chairman for presiding, the meeting separated.

C. RUTHERFORD, *Secretary.*

PATHOLOGICAL SOCIETY OF LONDON.

AT the ordinary meeting held on December 4th, Dr. DAWSON WILLIAMS read a note of some experiments on the Etiology of Tuberculosis. He said that after Villemin had in 1865 firmly established the fact of the inoculability of Tuberculosis, his experiments were repeated and confirmed by many observers, some of whom went further, and maintained that Tuberculosis followed, in the rodents, the infliction of various injuries, and the injection of such substances as quicksilver and charcoal into the jugular vein (Lebert and Wyss), and as aniline blue into the subcutaneous tissue (Waldenburg); Dr. Wilson Fox obtained a like result with putrid muscle, the products of acute inflammation, and vaccine fluid. Dr. Fox also found that inoculation with pyæmic pus and the introduction of a seton, were with considerable frequency followed by Tuberculosis in the rodents, and these observations were confirmed by Dr. Burdon Sanderson. A number of the observers had produced Tuberculosis by the inoculation of various non-tubercular substances, among whom were Sir Andrew Clark, Mr. Simon, Ruge, Empis, and Behier; and quite recently Formad and Robinson, in Philadelphia, made a very extensive series of experiments, with striking results. At the request of Dr. Wilson Fox and Dr. Sanderson, Dr. Williams had repeated some of the earlier experiments with non-tubercular material; care was taken to avoid contamination with tubercular material, but no antiseptics were used. The repetition of the experiments with putrid fluids gave entirely negative results; all the animals (guinea-pigs) which survived the primary infective fever (when this occurred) recovered entirely, and when killed after varying periods presented no lesions of either a tubercular or pyæmic character. In seven guinea-pigs setons were introduced, but all the animals remained healthy, and when killed were found quite free from disease. Dr. Dawson Williams

referred to Mr. Watson Cheyne's experiments published while his were in progress, and remarked that his results entirely coincided with Mr. Cheyne's on this point. In Germany, Salomonsen and Baumgarten had made numerous experiments with the products of inflammation, with tumours, and with fungi and micro-organisms, with negative results. All the experiments of Waldenburg, Fox, Sanderson, and Cohnheim had now been repeated with negative results. The evidence, therefore, was all against the theory that Tuberculosis could be produced in any other way than by infection with tubercular material. Dr. Dawson Williams further thought that the observations on the eye after inoculation recently published by Baumgarten and Aendt were extremely important, and appeared to show that the growth of the bacilli preceded the characteristic histological changes, which would make it appear that these changes were the reaction of the tissues under the peculiar stimulus of the growing bacillus. The all-important *rôle* now assigned to the bacillus was thought to land us in fresh difficulties, and it seemed possible that it might, after all, be shown that the activity of the bacillus was, when a broad view of the etiology of the disease was taken, of secondary importance.

Dr. WILSON FOX corroborated the statements contained in Dr. Williams' paper; and then said that it was owing to the recent publications of Cohnheim and Koch that he determined some months ago, and before he was aware of the work of Mr. Watson Cheyne, to repeat his former experiments on the artificial production of tubercle in animals. The latest conclusions of Cohnheim, and the new discovery of Koch, both favoured the view that Tuberculosis was a specific disease. If that were the case, then other observers ought not to allow their observations to stand in direct contradiction. He must say that the results recorded by Dr. Williams were quite different from what he had expected. However, he felt convinced that there must have been some fallacy in the carrying out of his (Dr. Fox's) original experiments, although he could not say what that fallacy was. He had observed that no non-inoculated guinea-pig had taken the disease whilst living with other tubercular animals. It had been shown by others that if an injured guinea-pig be placed with tubercular animals, Tuberculosis appeared in the injured animal. It resulted from all that had been done that we were now reduced to M. Villemin's original proposition. That observer had noted that the localisations of Tubercle, Glanders, and Syphilis were morphologically similar; and he considered that Tubercle, like the rest, was an inoculable disease. Of the bacillary aspect of the question Dr. Fox would not say much. Whether all bacilli were evolved from one genus or not he could not tell, but he thought we were in danger of establishing a "phthisiophobia" out of these most recent doctrines. Thirty years' work of Tubercle rather warned us to be on the alert against "phthisiomania" when we remembered that hardly any doctrine had lasted more than five years.

Mr. WATSON CHEYNE thought the contribution of great value from a point of view of literature; the results of Dr. Wilson Fox's experiments were long a stumbling-block to men. He briefly spoke of the reasons which had led him to make his own experiments on the etiology of Tuberculosis.

Mr. HULKE said the Society was deeply indebted to Dr. Williams, and to Dr. Wilson Fox for the noble way in which he had spoken of his previous experiments. The question whether the pathogenic bacilli were various modifications of one primary form was an exceedingly difficult one. Billroth thought they were all modifications of one primitive form, but that view would probably not be accepted by many now.

Dr. DAWSON WILLIAMS said, in reply, that he could not speak for Dr. Sanderson, as he was not familiar with his opinions on the question.

Jurisprudence.

A HORSE CASE.

FERGUSON *v.* TANNER.

THIS was an action, tried in London at sittings at Nisi Prius, before Mr. Justice Lopes and a Special Jury, on December 1st, for breach of warranty of a hunter called "Waterford," brought by Colonel Ferguson, of the 2nd Life Guards, against the defendant, a gentleman living near Buckfastleigh, Devonshire.

Mr. Matthews, Q.C., and Mr. Channell appeared for the plaintiff; Mr. M'Intyre, Q.C., and Mr. Ashton Cross were for the defendant.

Mr. Matthews having opened the case,

Colonel Ferguson was called and examined. He first saw the horse in question at Tattersall's on the 18th of October, 1882, where it was in charge of the defendant's groom. After riding the horse up and down he noticed that it coughed a good deal, and pointed this out to the groom, asking him whether his master would give a warranty against the effects of the cough. The groom said he had no doubt that his master would warrant the horse sound in wind and eyes, and that he would telegraph to him. Colonel Ferguson then gave instructions to a veterinary surgeon to have the horse examined, and the next day, going again to Tattersall's, the groom handed him a telegram which had come from the defendant, to the effect that he would warrant the horse sound in eyes and wind. Colonel Ferguson then paid a cheque to Tattersall's for the price, £200, and the horse was sent down to the barrack stables at Windsor. It was then placed under the care of Mr. Simpson, a well-known veterinary surgeon at Windsor, and was pronounced by him to be cured of the cough on November 9th. The next day the colonel rode the horse, and found that on being galloped it was a "whistler." Upon this he at once wrote to the defendant asking him to take the horse back, but the defendant declined, observing that, the horse having been sold at Tattersall's, it was one of the conditions of sale that if it did not answer to the warranty it should be returned within two days. Colonel Ferguson upon this directed that the horse should be sold by auction, and it was knocked down at Tattersall's to the defendant on the 18th of December for 36 guineas. Being asked whether at the time he bought the horse he had any communications with Tattersall's, witness replied that he had not, nor was he aware that the conditions referred to by the defendant had any application to sales by private contract.

Cross-examined.—The horse was examined by Mr. Sewell, a veterinary surgeon, on the day he first saw it. Sewell telegraphed to him that the horse had a cough and "seedy toes," but was otherwise sound. He knew that Sewell had taken the horse to the Wellington Riding School and that it had been ridden there by one of Tattersall's men. He saw the catalogue before he bought the horse. It mentioned that the horses would be sold in accordance with the conditions exhibited on the premises. These conditions he never saw. He did not think they applied to a private sale. Before he went to look at the horse he was told that it grunted.

Mr. Simpson, a veterinary surgeon at Windsor, proved that he saw the horse at Tattersall's before it was bought by the plaintiff. It was a good-looking, weight-carrying animal, but when struck it would grunt.

By the Judge.—That is an affection of the wind, is it not?

Witness.—Yes, in nine cases out of ten. He advised the colonel not to take the horse unless it was sound. The horse was placed under his care afterwards, at his stables in Windsor, for his cough, and on the 9th of November he pronounced him fit. On the 11th he examined him again, and found he was a whistler.

By a Juror.—Whistling and grunting are two distinct things.

To the Judge.—He was of opinion that the grunting here was connected with the whistling.

Cross-examined.—He tested the horse in the usual way at Tattersall's, by pinching his throat and threatening to strike him.

Charles Dowling, a groom, having given corroborative evidence of the horse's cough at the time of the sale and at Windsor afterwards,

Professor Robertson, of the Royal Veterinary College, was called. He made a special examination of the horse on the 17th of November, and found him to be unsound in wind; he was a whistler. Witness made no attempt to determine of how long standing the unsoundness was. Whistling was often connected with grunting, and would be undoubtedly aggravated by a cold or cough.

Cross-examined.—He did not know the horse had been suffering from severe cold when he examined him.

To the Judge.—He had no means of judging whether the horse was unsound on the 19th of October. If he grunted on the 19th of October it would lead him to suppose, from what he saw afterwards, that he was unsound then.

Cross-examination continued.—It was perfectly possible that a horse might be a grunter without being unsound. A few days after recovering from cold it would not be in a condition to undergo a severe galloping test. He had no means of judging whether what he observed was due to influenza.

Re-examined.—Whistling was a structural defect. He could distinguish this from the heavy breathing of a cold. Grunting might or might not be unsoundness.

To the Judge.—Cold and cough often lead to whistling. He did not think the cold and cough he had heard described would lead to the whistling he detected.

This closed the plaintiff's case, and

Mr. Cross, having addressed the jury, called the defendant, Mr. Tanner. He said he bought the horse in question in January, 1882, for £189. He hunted it the whole of that season with the Dartmoor foxhounds. He rode between 17 and 18 stone, and the horse carried him remarkably well. He never whistled, or roared, or appeared distressed. He rode him again out hunting in October before sending him to Tattersall's. He gave the warranty relied upon. Afterwards, when the horse was sold again, he bought him for 36 guineas. The horse was then taken to Devonshire, and he had been examined by three veterinary surgeons, including Mr. Pritchard from London. They all pronounced him sound. He rode the horse again as a hunter, and the reports of the veterinary surgeons were confirmed, for the horse never whistled.

Cross-examined.—He could give no reason why he wrote, in answer to Colonel Ferguson's complaint about the horse, that it ought to have been returned in two days, instead of relying upon his warranty.

Easterbrook, the defendant's groom, said he told Colonel Ferguson before he bought the horse that it had always been a grunter, and had had a cough since it left home. He was present when Sewell, the plaintiff's veterinary surgeon, examined the horse. The examination was thorough and critical, and took place at the Wellington Riding School. There was nothing now the matter with the horse's wind.

Mr. Pritchard, of the Veterinary College of Surgeons, was the next witness. He examined the horse in January, after it had been re-bought by the defendant. It was sound and not a whistler.

Cross-examined.—Grunting is not an unsoundness; it is produced by nervousness. The existence of grunting would make him suspicious of whistling, but he would never condemn a horse for mere grunting. Whistling

when incurable was caused by paralysis of nerves. Cold was the most common cause of whistling, which might be cured.

A clerk from Tattersall's was here called to produce the conditions of sale, and, in answer to the learned judge, said these conditions did not apply to a private sale.

The learned Judge.—The only question for the jury is whether the horse was sound in wind on the day of the sale.

James Heath and two other veterinary surgeons were called, and proved the soundness of the horse after it went back to Devonshire, and the huntsman of the Dartmoor hounds said he had often ridden in company with the defendant when he was mounted on Waterford, and had never detected any whistling or roaring.

This closed the defendant's case, and the learned counsel on either side having addressed the jury,

Mr. Justice Lopes summed up. The question for the jury was one of fact, whether the horse Waterford was sound in wind on the 19th October. It was common ground that the horse was a grunter, but this was not necessarily unsoundness, and to entitle the plaintiff to recover for breach of the warranty they must be satisfied that when it was given the horse had either a disease or the seed of disease such as would tend to diminish his usefulness.

The jury, without retiring, gave a verdict for the defendant, and

His Lordship gave judgment accordingly.

Notes and News.

THE INTERNATIONAL HEALTH EXHIBITION OF 1884.—This exhibition, which is to be held in London, under the patronage of Her Majesty the Queen, towards the middle of this year, promises to be of a very extensive character. The executive and general committees have been formed, and have commenced their onerous task. Mr. Fleming, President of the Royal College of Veterinary Surgeons, and Principal Veterinary Surgeon to the Army, has been appointed a member of the General Committee.

HORSES IN RUSSIA.—The census of horses taken last autumn by the military authorities in fifty-eight provinces of European Russia gives a total of nearly fifteen million as fit for service in case of necessity.

PROTECTIVE INOCULATION.—The vaccination of animals, according to the plan suggested by the eminent French *savant*, M. Pasteur, in order to protect them against Rinderpest and other diseases, has been tried in British Burmah with great success. Some calves, elephants, sheep, and a pig were inoculated with M. Pasteur's lymph, and, though they suffered in no way from the experiment, the calves in particular seem to have been so far proof from further infection that they escaped scot-free when placed several times amongst herds severely affected by Rinderpest.

Obituary.

THE following deaths are reported by the Secretary of the Royal College of Veterinary Surgeons:—R. S. Bailey, M.R.C.V.S., Lambourne, Berks, who graduated in 1836; J. O. Vincent, M.R.C.V.S., who graduated in 1852; W. Bennet, M.R.C.V.S., late Banbury, who graduated in 1860; J. Beeson, M.R.C.V.S., Harrow, who graduated in 1881; A. Horne, M.R.C.V.S., Kilkenny, who graduated in May, 1866; and T. E. Hobson, M.R.C.V.S., Leicester, a graduate of 1852.

Army Veterinary Department.

Gazette, December 18th, 1883.

THE undermentioned gentlemen to be Veterinary Surgeons on Probation :—John Armstead Braddell, Thomas Archibald Mitchell.

Correspondence, etc.

A REMARKABLE CASE OF FOUNDER.

SIR,—On perusing the article on the above by Mr. Macgillivray, in the November issue of the VETERINARY JOURNAL, I was surprised at the treatment carried out, after "resolving to relieve the poor suffering brute."

The animal could only have had his sufferings relieved by being speedily destroyed, as the case was hopeless. The oozing of blood from all coronets clearly indicated the extent of the lesions, namely, that there was a separation of the horny and sensitive laminæ, complete in the feet of the off side and partial in those of the near side.

The blood escaping from the ruptured blood-vessels into the horny box was forced out at the weakest part, namely, at the coronet; and with the continued motion of the animal and the gravitating of the blood, with the pressure when the feet came to the ground, only caused the separation to be the more complete. As regards the escape of gas-bubbles from the feet of the off side after the toe had been cut, this proves that the destruction of the union between the horny and sensitive laminæ had been complete, as the sole also was involved to a great extent.

The air gained entrance by the wounds at the coronets, owing to there being a vacuum formed when the feet were elevated from the ground; the greater part of the air gaining entrance would be expelled when the foot was again placed on the ground.

To cut the horn at the toes to relieve pressure, by allowing the blood to escape, was surely injudicious, when the pressure was only too well relieved by the blood oozing at the coronet of all feet; this mode of treatment was only complicating the case.

Had the case been a more hopeful one, greater benefit would have been derived by rasping the walls level with the soles, and thereby preventing, as far as possible, the chance of convexity of the soles, by allowing the weight of the animal to be partly borne by them, as intended by nature.

The application of strong sinapisms to the sides of a horse is the most effectual mode of restricting the number of respiratory movements, and of bringing about the death of the animal through the formation of extra fibrine-forming material in the blood.

The temperature of the animal's body would fall by the administration of aconite given repeatedly, and by there being imperfect aeration of the blood, due to the condition of the lungs and the number of the respiratory movements being restricted.

Cold water being one of the best febrifuges, and considering what the animal had been and was suffering, no wonder he should be "willing to take a little water" to diminish his sufferings.

What the *post mortem* appearances would be in this case, should at the first visit have been fully comprehended by such a distinguished writer as Mr. Macgillivray is, many of whose former contributions I have read with pleasure, and derived great benefit from their careful study.

Yours, etc.,

THOS. A. PORTEOUS.

TWO SIDES TO A STORY.

SIR,—I often wonder what it is that possesses some people who, according to their own account, are ardent promoters of the good of the profession, to abuse the Council of the Royal College on every occasion for trying to carry out the wishes of the members who elected them. These people seem to think that the Council and the profession are not only separate entities, but that the former are doing all they can to thwart the objects and injure the prospects of the latter. It would be needless to endeavour to enlighten such persons, for they are either so hopelessly stupid or virulently malicious that nothing one could write or say would do them any good. It would be needless, for instance, to tell them that the members of Council are elected by the entire body of the profession, and are part and parcel of the profession; and that, therefore, to abuse or make unworthy insinuations against them is simply doing so to those who elected them—the members.

It is somewhat curious that this abusive treatment should chiefly emanate from those who should know better, some of whom occupy somewhat responsible positions, as teachers of veterinary students; and who should, therefore, instead of poisoning the minds of these with damaging nonsense which has no foundation in fact, or presenting them with a political picture of the profession they are about to enter which is the opposite of correct, should be endeavouring either to employ their time usefully by teaching them their calling (which is much required), giving them a taste for their profession, or inculcating respect for those who are trying their utmost to raise it. I fear there is a lot of narrow-minded, ungenerous feeling at the bottom of the disparaging remarks made about the Council, such as should not be found in any one entrusted with the teaching of young men. A bad example is very contagious to young folks, and if ill-natured sneers are the order of the day at our schools what can we expect?

It is somewhat strange and not very complimentary, that for two years in succession Edinburgh should distinguish itself in abusing the Council from professorial chairs. Last year it was a young fledgling of a professor, who had scarcely time to know what he was about. This year it is an older man, who has no excuse for either speaking or acting against the profession, of which he at any rate *professes* to be a well-wisher.

I have read with considerable pain the references to the Council of the Royal College made by the Principal of the Edinburgh New Veterinary College in the opening address delivered by him on October 24th, as reported in the VETERINARY JOURNAL for December. I suppose in confirmation of the old saying that "every cock crows best on its own dung-heap," that gentleman found he could say without fear of contradiction at that time and place what he would not give utterance to at the Council. In the first place, he makes an assertion for which, I think, there is no foundation whatever. In speaking of the "rapid and upward progress" of the profession, he says this "happy result has been due to the efforts of several earnest men, who first of all founded associations for the purpose of considering the requirements of the profession generally, and of bringing those requirements before the notice of the Council of the Royal College, where, after a time, they received due consideration, and were carried into effect." I challenge him to name the men or the associations which did this.

Next he rather, I think, sneers at the efforts of the Council in obtaining Charters and the valued Act of Parliament; but it must be remembered that in everything that has been done by the Council in the way of improving the profession by these and other means, the Principal of the New Veterinary College has in no way, so far as I am aware, assisted. On the contrary, he has ever been ready to find fault, and he evidently takes great credit to himself for having successfully opposed the last charter, in so far as the

pupilage question is concerned. And it must be remembered that in doing so he was, as a member of Council, acting in a hostile manner towards the great majority of the Council and the profession; and there had to be summoned to oppose the Royal College, the powerful corporations of Edinburgh and Glasgow, and that opponent of the Royal College, the Highland and Agricultural Society of Scotland, to which, I believe, the Principal of the New College is Veterinary Adviser. One of the grounds of opposition to the pupilage clause of the Charter was, that pupilage with a private practitioner might damage the morals of the pupil. The profession can now see who its friends are. It will be remembered by those who were present at the last annual meeting, that this gentleman, in speaking of pupilage, had the effrontery to assert that practitioners could not teach pupils the practical part of their profession, that they did them more harm than good, and that they had to unlearn all they had so learned when they went to his school. It is rather amusing now to find that in his address (page 458 of the Journal) he is wroth with the Council because at the final examination of a student, should he fail in his practical, it will not sanction his being "allowed to cultivate his practical knowledge with a veterinary surgeon." No doubt it would be very convenient for the Principal to have his imperfectly-educated students taken off his hands, to make room for others, and so keep the mill going; but surely he can care very little for the welfare of these unfortunates if he would ruthlessly consign them to the members of the profession who cannot teach, and with whom the morals of these highly moral three-year students would be likely to suffer so seriously. No, Mr. Principal, the Council did quite right in declining the favour your generosity tried to confer on the profession. The students have paid you full fees for teaching them their profession, and it is hardly decent that, having got their money, they should be handed over to, by your own account, incompetent practitioners, so that you may be relieved of further trouble and responsibility. "Common sense and justice" has decided that your views at the Council will not prevail in such a matter.

Notwithstanding his objections to pupilage, I have no doubt that if he were one of the maligned practitioners, instead of being the proprietor of a veterinary school, he would have as many pupils as he could accommodate; and indignantly resent such slanderous imputations as have been applied to the members of the profession. It must be remembered that veterinary teachers are ordinary mortals, after all is said and done.

The Principal also says that "in every reform which had been established during the last fifteen years, the Council had the willing and hearty support of the schools." Nothing, to my knowledge, could be further from the truth. I am now an old member of Council, and I can testify that, for years, every attempt at improving the position of the profession in education was strenuously opposed by one or more of the schools. The late Professor Spooner consistently and persistently opposed every proposal made at the Council to improve veterinary education, and he did nothing himself to ameliorate the condition of the profession. His successor followed in the same course. Everything that has been done to improve our position, socially and scientifically, has been by the Council, which more frequently than not has been opposed by the schools.

Even the examination in general education which has now been taken up by the Council, was opposed by at least some of the schools, and would never have been brought into force had it not been for the perseverance and tact of the President.

And had it not been for the Council the profession would long ago have been split up into contending factions; as at one time the Principal of the New College exerted himself to the utmost to break it up by agitating for another licensing body; and not long after the late Principal of the London School,

though at the time a member of Council, tried to get licensing power for his school. No, the profession owes but little, if anything, to the schools; and if it desires to advance it must itself move and effect reforms and improvements. None will come from the schools, we may be sure, judging from their past history.

The schools are all very well in their place, to teach students the rudiments of their profession. The profession until lately has had too much of the schools politically, and too little educationally. Let us hope that all this is changed, and that if students are to be compelled to listen to the political history of the profession, they may hear a correct version.—Yours, etc.,

COUNCIL-MAN.

ANSWERS TO CORRESPONDENTS.

R. BEART, BIRMINGHAM.—A Registered Practitioner may designate himself a Veterinary Surgeon, but from the *passing* of the Veterinary Surgeons Act he was liable to a fine not exceeding twenty pounds, if he took or used any name, title, addition or description by means of initials or letters placed after his name or otherwise; stating or implying that he is a Fellow or Member of the Royal College of Veterinary Surgeons. "Reg. M.R.C.V.S. London" is an illegal title if adopted by a registered practitioner, and he can be proceeded against.

ENQUIRER.—The penal section of the Act can now be applied to unregistered persons.

R. POYER.—Yes.

No notice can be taken of anonymous communications. Whatever is intended for insertion must be authenticated by the name and address of the writer, not necessarily for publication, but as a guarantee of good faith. We cannot undertake to return rejected communications.

CORRECTION.

In the Journal for December, page 424, line 35, for "rapidly," read "rigidly."

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from J. A. Porteous, Melrose; W. Stanley Carless, Lincoln; J. B. Gresswell, Louth; R. Poyser, A.V.D., Bengal; Professor Osler, Montreal; S. Gillespie, A.V.D., India; A. McCarmick, Leeds; W. Alston Edgar, Dartford; J. Donald, Wigton; R. Beart, Birmingham; "Enquirer"; C. Rutherford, Edinburgh; "Council-man."

BOOKS AND PAMPHLETS: Transactions of the Pathological Society; *H. Warrikoff*, Ueber de Wirkung einzelner Antiseptica; *G. Schneidemühl*, Die Lupinen-Krankheit der Schafe; *R. Molkentin*, Ein Beitrag zur Sickerstellung der Diagnose des Occulten Rotzes; *Dr. Willems*, Nouvelles Recherches sur La Pleuropneumonie Contagieuse de l'Espece Bovine; *J. M. Contamine*, De l'Epizootie Typhöide; *A. Miglioranza*, Le Vaccinazioni Carbonchiose di Anguillara Col Sistema Perroncito.

JOURNALS, ETC.: *Deutsche Zeitschrift für Thiermedecin und Vergleichende Pathologie; Wochenschrift für Thierheilkunde; La Presse Vétérinaire; Quarterly Journal of Veterinary Medicine in India; Centralblatt für Veterinarwissenschaft; Quarterly Journal of Veterinary Science in India; La Clinica Veterinaria; United States Veterinary Journal; Archives Vétérinaire; Annales de Méd. Vétérinaire; National Live Stock Journal; Mark Lane Express; Lancet; Live Stock Journal; L'Echo Vétérinaire; Medical Press and Circular; Bulletin de la Société Centrale de Médecine Vétérinaire; American Veterinary Review; Journal de Méd. Vétérinaire; London Medical Record; Revue Vétérinaire; Edinburgh Medical Journal; Der Thierarzt.*

NEWSPAPERS: *Madras Mail; Calcutta Englishman; Irish Sportsman; Wolverhampton Evening Express; Lahore Civil and Military Gazette; Reading Observer; Daily Chronicle.*

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